INITIAL SUBMITTAL OF WALKTHROUGH JPMS

FOR THE PERRY INITIAL EXAMINATION - JANUARY 2001

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Facility: PERRY Task No: 208-515-02-01

JPM No: B.1.a

Task Title: **Shifting NCC Pumps**

K/A Reference: 400000 A4.01 (3.1 / 3.0)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Task Standard:	**Nuclear Closed Cooling (NCC) pumps are shifted from NCC Pumps A and B running to NCC Pumps A and C running in accordance with SOI-P43.**
Required Materials:	Simulator setup is per specified instructions for this NRC exam.
General References:	SOI-P43, Nuclear Closed Cooling System Revision 6, PIC 10
Initial Conditions:	**NCC Pumps A and B are currently in operation.**
Initiating Cue:	**The Unit Supervisor directs you to shift from NCC Pumps A and B running to NCC Pumps B and C running in accordance with SOI-P43.**
Time Critical Task:	YES/NO X
Validation Time:	15 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD CAPITAL** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. SOI-P43, Section 5.1, Shifting NCC Pumps, branches to SOI-P43, Section 4.2, Additional NCC Pump Startup.

STANDARD: Candidate correctly locates SOI-P43, Section 5.1, and branches to Section 4.2.

COMMENTS:
1. Candidate references SOI-P43, Section 5.1, which directs him to Section 4.2, Additional NCC Pump Startup.
2. **Candidate dispatches a Non-Licensed Operator to assist with NCC Pump C startup at this time (Precaution and Limitation 2.0.3)**
3. Simulator Driver will role-play as the Non-Licensed Operator for the entire evolution.

SAT / UNSAT START TIME: _____

_____ * 2. **Throttle NCC Pump C Disch, P43-F513C, 10% open.**

STANDARD: Non-Licensed Operator directed to throttle to 10% open NCC Pump C Disch, P43-F513C.

COMMENTS:
1. Candidate references SOI-P43, Section 4.2.
2. Valve is normally in the full open position when NCC Pump C is in Standby.

SAT / UNSAT

---

* 3. **Take NCC PUMP C, P43-C001C, control switch to START.**

STANDARD: Red light ON for NCC Pump C.

COMMENTS:
1. The candidate should observe initial pump starting current on meter P43-R352, NCC PUMP C AMPS.
2. The candidate should observe pump discharge pressure (~130 psig) on meter P43-R026C, NCC PUMP C DISCH PRESSURE.

SAT / UNSAT

---

* 4. **Open NCC Pump C Disch, P43-F513C.**

STANDARD: Non-Licensed Operator directed to fully open NCC Pump C Disch, P43-F513C.

COMMENTS:
1. The candidate should observe normal pump current (60-80 amps) on meter P43-R352, NCC PUMP C AMPS.
2. The candidate should observe normal pump discharge pressure (96-125 psig) on meter P43-R026C, NCC PUMP C DISCH PRESSURE.

SAT / UNSAT

---

5. Verify NCC HDR PRESSURE, P43-R221, has stabilized between 94 and 123 psig.

STANDARD: NCC HDR PRESSURE, P43-R221, has stabilized between 94 and 123 psig.

COMMENTS:
1. **Last step in Section 4.2 is not applicable.**
2. Candidate exits SOI-P43, Section 4.2, and returns to Section 5.1, which directs him to SOI-P43, Section 6.1, NCC Pump Shutdown.

SAT / UNSAT

____ * 6. **Throttle NCC Pump A Disch, P43-F513A, closed until it is 2% open.**

STANDARD: Non-Licensed Operator directed to throttle to 2% open NCC Pump A Disch, P43-F513A.

COMMENTS: 1. Candidate references SOI-P43, Section 6.1.

2. **The next step must be performed immediately since allowing an NCC Pump to run for any length of time with its discharge valve less than 10% open may result in pump damage.**

SAT / UNSAT

____ * 7. **<u>IMMEDIATELY</u> take NCC PUMP A, P43-C001A, control switch to STOP.**

STANDARD: Green light ON for NCC Pump A.

COMMENTS: 1. **The Non-Licensed Operator must immediately report when NCC Pump A Disch, P43-F513A, is at 2% open.**

2. The candidate should observe pump current decreases to zero amps on meter P43-R350, NCC PUMP A AMPS.

3. The candidate should observe pump discharge pressure decreases to ~ 40 psig on meter P43-R026A, NCC PUMP A DISCH PRESSURE.

   40 psig is the static head of the NCC surge tank.

4. The candidate should observe NCC header pressure (94-123 psig) on meter P43-R221, NCC HDR PRESSURE.

SAT / UNSAT

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

____ * 8. **Open NCC Pump A Disch, P43-F513A.**

STANDARD: Non-Licensed Operator directed to fully open NCC Pump A Disch, P43-F513A.

COMMENTS: Valve is normally in the Full open position when NCC Pump A is in Standby.

SAT / UNSAT STOP TIME: _____

TERMINATING CUE: NCC Pumps have been shifted from NCC Pumps A and B running to NCC Pumps B and C running.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.a

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE WORKSHEET
Attachment #1

Initial Conditions:	NCC Pumps A and B are currently in operation.
Initiating Cue:	The Unit Supervisor directs you to shift from NCC Pumps A and B running to NCC Pumps B and C running in accordance with SOI-P43.

Perry JPM B.1.a

Shift NCC Pumps

Reference Materials

3. Open NCC Pump B(C,A) Disch, P43-F513B(C,A).

4. Verify NCC HDR PRESSURE, P43-R221, on P970 has stabilized between 94 and 123 psig.

5. If NCC HDR PRESSURE, P43-R221, on P970 is greater than 125 psig and two pumps are operating, perform NCC Pump Shutdown for one of the operating pumps.

5.0 SYSTEM OPERATIONS

The following parameters should be monitored on Common Long Response Control Panel, H13-P970, during system operation:

1. NCC PUMP A, B, C DISCH PRESSURE, P43-R026A, P43-R026B, P43-R026C, between 96 and 125 psig for the running pumps.

2. NCC HDR PRESSURE, P43-R221, between 94 and 123 psig.

3. NCC PUMP A, B, C AMPS, P43-R350, P43-R351, P43-R352, between 60 and 80 amps for the running pumps.

4. NCC HX OUT TEMP, P43-R041, within the limits of P&L 2.0.5.

5.1 Shifting NCC Pumps

1. Perform Additional NCC Pump Startup for the idle pump.

2. Perform NCC Pump Shutdown for one of the previously operating pumps.

5.2 Shifting NCC Heat Exchangers

1. Perform Placing an Additional NCC Heat Exchanger in Service.

2. Perform Removing an NCC Heat Exchanger From Service for one of the previously in service heat exchangers.

(INTENTIONALLY BLANK)

4.1 System Startup

1. Perform System Fill and Vent if applicable.

2. Verify NCC LOCA BYPASS switch, P43-BS1, in NORM on Div 1 & Div 3 Cntmt & D/W Isolation Valve Control Panel, 1H13-P881.

3. Verify NCC LOCA BYPASS switch, P43-BS2, in NORM on Division 2 Containment & Drywell Isolation Valve Control Panel, 1H13-P882.

4. Start the first NCC Pump, if not already running from System Fill and Vent, as follows:

   a. Throttle the selected NCC Pump A(B,C) Disch, P43-F513A(B,C), to 10% open.
   b. Take NCC PUMP A(B,C), P43-C001A(B,C), control switch on Common Long Response Control Panel, H13-P970, to START.
   c. Open NCC Pump A(B,C) Disch, P43-F513A(B,C).

5. Verify NCC HDR PRESSURE, P43-R221, on P970 has stabilized between 94 and 123 psig.

6. If NCC PUMP A(B,C) DISCHARGE PRESSURE, P43-R026A(B,C), on P970 is less than 96 psig, perform Additional NCC Pump Startup.

7. At local panel 1H51-P1151, adjust the following controllers to the desired temperature within the limits of P&L 2.0.5, by using the knurled knob:

   a. HEAT EXCHANGER OUTLET TEMPERATURE CONTROLLER, P43-R045A
   b. HEAT EXCHANGER OUTLET TEMPERATURE CONTROLLER, P43-R045B
   c. HEAT EXCHANGER OUTLET TEMPERATURE CONTROLLER, P43-R045C

8. For the pump(s) that are not running, verify open NCC Pump B(C,A) Disch, P43-F513B(C,A).

9. If NCC HX OUT TEMP, P43-R041, on P970 drops below the low temperature limit, close NCC Hx A(B,C) SW Outlet, P41-F527A(B,C), for one of the two operating NCC Heat Exchangers.

10. If NCC HX OUT TEMP, P43-R041, on P970 increases above 89°F, verify NCC Hx A(B,C) SW Outlet, P41-F527A(B,C), open on the two operating NCC Heat Exchangers.

→ 4.2 Additional NCC Pump Startup

1. Throttle NCC Pump B(C,A) Disch, P43-F513B(C,A), 10% open.

2. Take NCC PUMP B(C,A), P43-C001B(C,A), control switch on Common Long Response Control Panel, H13-P970, to START.

3. Open NCC Pump B(C,A) Disch, P43-F513B(C,A).

4. Verify NCC HDR PRESSURE, P43-R221, on P970 has stabilized between 94 and 123 psig.

5. If NCC HDR PRESSURE, P43-R221, on P970 is greater than 125 psig and two pumps are operating, perform NCC Pump Shutdown for one of the operating pumps.

5.0 SYSTEM OPERATIONS

The following parameters should be monitored on Common Long Response Control Panel, H13-P970, during system operation:

1. NCC PUMP A, B, C DISCH PRESSURE, P43-R026A, P43-R026B, P43-R026C, between 96 and 125 psig for the running pumps.

2. NCC HDR PRESSURE, P43-R221, between 94 and 123 psig.

3. NCC PUMP A, B, C AMPS, P43-R350, P43-R351, P43-R352, between 60 and 80 amps for the running pumps.

4. NCC HX OUT TEMP, P43-R041, within the limits of P&L 2.0.5.

5.1 Shifting NCC Pumps

1. Perform Additional NCC Pump Startup for the idle pump.

2. Perform NCC Pump Shutdown for one of the previously operating pumps.

5.2 Shifting NCC Heat Exchangers

1. Perform Placing an Additional NCC Heat Exchanger in Service.

2. Perform Removing an NCC Heat Exchanger From Service for one of the previously in service heat exchangers.

(INTENTIONALLY BLANK)

4. At local panel 1H51-P1151, verify HEAT EXCHANGER OUTLET TEMPERATURE CONTROLLER, P43-R045C(A,B), set at the desired temperature within the limits of P&L 2.0.5.

6.0 SHUTDOWN

6.1 NCC Pump Shutdown

****

CAUTION

Allowing an NCC Pump to run for any length of time with its discharge valve less than 10% open may result in pump damage.

****

1. Throttle the desired NCC Pump C(A,B) Disch, P43-F513C(A,B) closed until it is 2% open.

2. IMMEDIATELY take NCC PUMP C(A,B), P43-C001C(A,B), control switch on Common Long Response Control Panel, H13-P970, to STOP.

3. Open NCC Pump C(A,B) Disch, P43-F513C(A,B).

6.2 Removing an NCC Heat Exchanger From Service

NOTE: The normal layup mode for the Service Water side of any not-in-service NCC Heat Exchangers is dry layup with the access port or end bell covers removed. This is done to minimize corrosion and prevent fouling by Zebra clams.

1. Close NCC Hx C(A,B) Outlet Isolation, P43-F530C(A,B).

2. Close NCC Hx C(A,B) SW Outlet, P41-F527C(A,B).

3. If desired, place the Service Water side of NCC Heat Exchanger C(A,B) in dry layup as follows:

   a. Close NCC Hx C(A,B) SW Inlet, P41-F523C(A,B).
   b. Open NCC Hx C(A,B) SW Drain, P41-F526C(A,B).
   c. Open NCC Hx C(A,B) SW Vent, P41-F525C(A,B).

(INTENTIONALLY BLANK)

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.b

Facility: PERRY Task No: 006-505-01-01
006-511-01-01
006-512-01-01
006-524-01-01
006-529-04-01
006-530-04-01

JPM No: B.1.b

Task Title: **Parallel and Load HPCS DG (Faulted)**

K/A Reference: 264000 A4.04 (3.7 / 3.7) K4.01 (3.5 / 3.7)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.b

Task Standard:	**The Division 3 Diesel Generator is shutdown (emergency shutdown) due to failure of HPCS DG to automatically trip on high jacket water temperature in accordance with SOI-E22B.**
Required Materials:	Simulator setup is per specified instructions for this NRC exam.
General References:	SOI-E22B, Division 3 Diesel Generator Revision 6, PIC 5
Initial Conditions:	**A post-maintenance test (PMT) is in progress for the Division 3 DG. The Division 3 DG remote startup per SOI-E22B, Section 4.5, Manual Startup from Standby Readiness, has been completed. A Non-Licensed Operator (NLO) is on-station locally monitoring the operation of the Division 3 Diesel Generator.**
Initiating Cue:	**The Unit Supervisor directs you to parallel the Division 3 DG to Bus EH13 and load the Division 3 DG to 2 MW for 1 hour in accordance with SOI-E22B, Division 3 Diesel Generator.**
Time Critical Task:	YES/NO X
Validation Time:	20 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.b

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Verify the Diesel Generator is running per Manual Startup from Standby Readiness.

STANDARD: HPCS DG confirmed to be in operation.

COMMENTS:
1. Candidate references SOI-E22B, Section 5.1.
2. Startup of the Division 3-DG was reported as completed in the Initial Condition summary.
3. Simulator Driver will role-play as the Non-Licensed Operator for the entire evolution.

SAT / UNSAT START TIME: _____

_____ 2. If the Diesel was started locally, place DIESEL CONTROL TRANSFER in REMOTE.

STANDARD: DIESEL CONTROL TRANSFER switch is in REMOTE.

COMMENTS: A remote startup of the Division 3-DG was reported in the Initial Condition summary; therefore, this step will not be applicable.

SAT / UNSAT

---

* 3. **Place SYNC SEL SWITCH in one of the following positions, as applicable:**

a. TH1 – if Brkr EH1303; PREFERRED SOURCE BRKR, is closed.
b. TH21 – if Brkr EH1302; ALTN PFD SOURCE BRKR, is closed.

STANDARD: SYNC SEL SWITCH is placed in the TH1 position, synchroscope is activated, synchroscope pointer begins rotating, and the synchroscope lights begin to flash on and off.

COMMENTS: The candidate should observe the current electrical lineup for Bus EH13 in order to determine which position the SYNC SEL SWITCH should be placed in.

SAT / UNSAT

---

* 4. **Adjust DIESEL GEN VOLTAGE REGTR to match BUS EH13 VOLTS RUNNING, 1R22-R022C, with INCOMING, 1R22-R021C.**

STANDARD: BUS EH13 VOLTS RUNNING, 1R22-R022C, indication is matched with INCOMING, 1R22-R021C, indication using the DIESEL GEN VOLTAGE REGTR switch.

COMMENTS:

SAT / UNSAT

---

* 5. **Adjust DIESEL GEN GOVERNOR such that SYNCHROSCOPE, 1E22-R022C, is moving slow in the FAST direction.**

STANDARD: SYNCHROSCOPE, 1E22-R022C, is moving slowly in the FAST (clockwise) direction.

COMMENTS: Candidate will have to significantly lower the speed of the Division 3-DG by holding the DIESEL GEN GOVERNOR switch in the LOWER position.

SAT / UNSAT

---

* 6. **With SYNCHROSCOPE, 1E22-R022C, moving slow in the FAST direction, at approximately the 2 minutes to 12 o'clock position, (synchroscope lights are the brightest), perform the following in succession:**

a. Take Brkr EH1301, DIESEL GEN BRKR, to close.

b. Take DIESEL GEN GOVERNOR to RAISE to achieve approximately 0.1 MW on DG LOADING MEGAWATTS, 1E22-R013C.

STANDARD: Red light ON for Brkr EH1301, DIESEL GEN BRKR, DG LOADING MEGAWATTS, 1E22-R013C, indicates 0.1 MW.

COMMENTS: Loading of Division 3 DG to 0.1 MW should be accomplished quickly in order to avoid a potential trip on reverse power.

SAT / UNSAT

---

7. Place SYNC SEL SWITCH in OFF.

STANDARD: SYNC SEL SWITCH is in the OFF position, synchroscope is deactivated, and the synchroscope lights de-energize.

COMMENTS:

SAT / UNSAT

---

* 8. **If it is desired to operate the Diesel Generator in parallel with the grid (for example, while performing loaded runs) exit this section and operate per Operations in Parallel with the Grid.**

STANDARD: Exit SOI-E22B, Section 5.1 and enter Section 5.3, Operations in Parallel with the Grid.

COMMENTS: Candidate references SOI-E22B, Section 5.3, Step 2 since the Division 3-DG is being operated remotely.

SAT / UNSAT

---

* 9. **Adjust Generator load using the DIESEL GEN GOVERNOR as necessary to achieve the desired DG LOADING MEGAWATTS, 1E22-R013C, maintaining between 0.1 and 2.8 MW.**

STANDARD: HPCS DG MW adjusted to 1 MW as indicated on meter DG LOADING MEGAWATTS, 1E22-R013C, using the DIESEL GEN GOVERNOR (2-minute wait period before next load adjustment).

COMMENTS:
1. Precaution and Limitation 2.0.13 directs loading/unloading the Division 3 DG in 1000 kW increments, with at least 2 minutes allowed for stabilization between each increment unless operating under emergency conditions, per an SVI, or per RSE direction.
2. **Division 3 DG fault (high jacket water temperature condition) will occur before candidate is able to load Division 3 DG to final value of 2 MW.**

SAT / UNSAT

---

* 10. **Adjust Generator voltage using the DIESEL GEN VOLTAGE REGTR as necessary to obtain a 0.9 lagging power factor such that MVAR = MW x 0.5).**

STANDARD: HPCS DG MVAR adjusted to 500 MVAR, as indicated on meter DG LOADING MEGAVARS, 1E22-R012C, using the DIESEL GEN VOLTAGE REGTR.

COMMENTS:
1. Candidate remains in SOI-E22B, Section 5.3, until it is desired to terminate parallel operations with the grid.
2. **Simulator Driver should insert Trigger during the 2 minute waiting period before the candidate raises Division 3 DG load to 2 MW.**

SAT / UNSAT

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.b

_____ 11. **Annunciator H13-P601-16 (D3), DIV 3 DIESEL GENERATOR TROUBLE is received.**

STANDARD: Consults ARI H13-P601-16 (D3), DIV 3 DIESEL GENERATOR TROUBLE, for expected operator actions to perform.

COMMENTS:

1. There are no Immediate Operator Actions to be performed.
2. The candidate contacts the Non-Licensed Operator to determine which local alarm has activated to cause the DIV 3 DIESEL GENERATOR TROUBLE alarm in the Control Room.
3. **As the Non-Licensed Operator, report that the local alarm at panel E22-P001 is HIGH WATER TEMPERATURE (window E1).**
4. **If requested, as the Non-Licensed Operator, report that JACKET WATER OUT TEMPERATURE indicates 200 degrees F (and increasing) on the local Engine Monitoring Panel.**
5. The candidate references ARI-E22-P001 (E1), HIGH WATER TEMPERATURE, for further guidance.

SAT / UNSAT

* 12. **Annunciator H13-P601-16 (F2), DG TRIP JACKET WATER TEMP HIGH, is received.**

STANDARD: Consults ARI H13-P601-16 (F2), DG TRIP JACKET WATER TEMP HIGH, for expected operator actions to perform.

Concludes that the Division 3-DG should have tripped but did not.

Immediately informs Unit Supervisor of the abnormal condition.

COMMENTS:

1. Immediate Operator Action is to shutdown DIESEL GENERATOR per SOI-E22B, if not required for adequate core cooling.
2. **As the Unit Supervisor, direct the candidate to perform an Emergency Shutdown of the Division 3 DG from H13-P601 per SOI-E22B.**
3. Candidate enters SOI-E22B, Section 6.4, Emergency Shutdown.

SAT / UNSAT

* 13. **For remote trip, at 1H13-P601:**

a. Take Brkr EH1301, DIESEL GEN BRKR, to TRIP
b. Take DIESEL GENERATOR to STOP.

STANDARD: Green light ON for Brkr EH1301, DIESEL GEN BRKR.

DIESEL GENERATOR switch placed in STOP momentarily and then released back to AUTO.

COMMENTS:

1. The candidate should observe HPCS DG stator amps decrease to zero amps on meter 1E22-R015C, DG STATOR Bϕ AMPS.
2. The candidate should observe DG stator volts decrease to zero volts on meter 1E22-R017C, DG STATOR Aϕ-Bϕ VOLTS.
3. The candidate should observe DG field amps decrease to zero amps on meter 1E22-R010C, DG FIELD AMPS.
4. The candidate should observe DG field volts decrease to zero volts on meter 1E22-R011C, DG FIELD VOLTS.
5. The candidate should observe DG megawatts decrease to zero megawatts on meter 1E22-R013C, DG MEGAWATTS.
6. The candidate should observe DG megavars decrease to zero megavars on meter 1E22-R012C, DG MEGAVARS
7. **As the Unit Supervisor, inform the candidate another operator is being assigned to place the Division 3-DG in secured status.**

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: Emergency shutdown of the Division 3 Diesel Generator is completed.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.b

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.b

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE B.1.b
Attachment #1

Initial Conditions:	A post-maintenance test (PMT) is in progress for the Division 3 DG. The Division 3 DG remote startup per SOI-E22B, Section 4.5, Manual Startup from Standby Readiness, has been completed. A Non-Licensed Operator (NLO) is on-station locally monitoring the operation of the Division 3Diesel Generator.
Initiating Cue:	The Unit Supervisor directs you to parallel the Division 3 DG to Bus EH13 and load the Division 3 DG to 2 MW for 1 hour in accordance with SOI-E22B, Division 3 Diesel Generator.

Perry JPM B.1.b

Parallel and Load HPCS DG (Faulted)

Reference Materials

7. When synchronized to the Grid:

   a. Generator load should be maintained above 50KW to prevent a reverse power condition.
   b. A lagging power factor of 0.9 should be maintained.

8. PTI-E22-P0006, Attachment 4, Division 3 HPCS Diesel Generator Auxiliary System Monitoring, must be completed any time the Diesel Generator is run for 60 minutes or greater.

9. Refer to PAP-1705, Attachment 1 for required readings and logs to be taken at each generator start <R00245>.

10. Only one Diesel Generator at a time may be tested during Operational Conditions 1, 2 or 3.

11. During an active LOCA or undervoltage condition, the EMERGENCY STOP button must be used to shutdown the diesel locally.

12. The Pre-Startup Inspection shall not be performed if Division 1 and Division 2 Diesel Generators are inoperable. <L01059>

13. DG loading/unloading should be done in 1000 KW increments, with at least 2 minutes allowed for stabilization between each increment unless operating under emergency conditions, per an SVI, or per RSE direction.

3.0 PREREQUISITES

1. Verify that applicable instruments vital to the system are in service for the expected mode of operation.

2. Portions of the Fire Service Water and CO_2 System that supply the Diesel Generator Building are in Service per SOI-P54(GAS) and SOI-P54(WTR).

3. The following systems in Standby Readiness or operating per the applicable SOI:

   a. HPCS ESW System per SOI-P45/49.
   b. DG Starting Air System per SOI-R44/E22B.
   c. DG Fuel Oil System per SOI-R45/E22B.
   d. DG Jacket Water System per SOI-R46/E22B.
   e. DG Lube Oil System per SOI-R47/E22B.
   f. Div 3 DG Building Ventilation System per SOI-M43.

4. Prior to starting the Diesel Generator, the operating train of Control Room HVAC should be running in Emergency Recirculation Mode to prevent drawing Diesel fumes into the Control Room for personal comfort.

4.4 Automatic Startup

NOTE: A LOCA signal will not cause the Diesel Generator to automatically connect to Bus EH13. Both the Preferred Source and Alternate Preferred Source Breakers must be open before the Diesel Generator Breaker will close on receipt of a LOCA or LOOP. If the Diesel Generator is connected to Bus EH13 and either the Preferred Source or Alternate Preferred Source Breaker are closed, the Diesel Generator Breaker will trip on receipt of a LOCA signal.

NOTE: If a LOCA or Undervoltage signal is generated while the Diesel Generator is stopping, DIESEL GEN BRKR, EH1301, will not close until the Stop Timer Relay, K8, times out (approximately 50 seconds).

1. The following occurs on a Div 3 DG start signal:

   a. The DG starts and is at rated speed and voltage within 10 seconds.
   b. ESW Loop C starts per SOI-P45/49.
   c. Div 3 DG Building Ventilation starts per SOI-M43.
   d. Brkr EH1301; DIESEL GEN BRKR, closes if all of the following conditions are met:

      1) Undervoltage condition on Bus EH13.

      2) Brkr EH1302; ALTN PFD SOURCE BRKR, open.

      3) Brkr EH1303; PREFERRED SOURCE BRKR, open.

2. Commence Diesel Generator readings per PTI-E22-P0006, Division 3 HPCS Diesel Generator Auxiliary System Monitoring.

3. Complete Diesel Generator Start Record per PAP-1705 <R00245>.

4.5 Manual Startup from Standby Readiness

1. For an Emergency Start, go to Step 6.

2. If Division 1 or Division 2 Diesel Generator is operable, Perform a Pre-Startup Inspection. <L01059>

3. Establish communication between the Control Room and the Diesel Generator Room.

4. Prior to non-emergency diesel starts, place the operating train of Control Room HVAC in Emergency Recirculation Mode per SOI-M25/26.

5. Prior to non-emergency diesel starts, place the operating train of Controlled Access and Miscellaneous Equipment Area (CA&MEA) HVAC System and MCC, Switchgear, and Miscellaneous Electrical Equipment Area HVAC System in Recirculation mode per SOI-M21 and SOI-M23/24, respectively.

6. Start HPCS ESW Loop per SOI-P45/49, unless the ESW Pump auto start feature is to be tested.

7. To start the Div 3 Diesel Generator remotely, hold DIESEL GENERATOR in START for 10 seconds, then release at ECCS Benchboard, 1H13-P601,

8. To start the Div 3 Diesel Generator locally:

   a. Place DIESEL CONTROL TRANSFER in LOCAL at 1H13-P601.
   b. Momentarily depress the START pushbutton on HPCS Diesel Generator Control Panel, 1E22-P001.

9. Commence Diesel Generator readings per PTI-E22-P0006, Division 3 HPCS Diesel Generator Auxiliary System Monitoring.

10. Complete Diesel Generator Start Record per PAP-1705 <R00245>.

5.0 SYSTEM OPERATIONS

During Diesel Generator operations monitor the following parameters:

NOTE: The following are for a continuous rating of 2600 KW and are approximate values.

ECCS Benchboard, 1H13-P601

HPCS ESW DG FLOW, 1P45-R208	800 gpm
DG STATOR BØ AMPS, 1E22-R015C	450 amps
DG STATOR AØ-BØ VOLTS, 1E22-R017C	4160 volts (min 3900 volts max 4400 volts)
DG FIELD AMPS, 1E22-R010C	1.2 amps
DG FIELD VOLTS, 1E22-R011C	65 volts
DG MEGAWATTS, 1E22-R013C	2.8 MW (max)
DG MEGAVARS, 1E22-R012C	1.3 MVAR at 0.9 pf-lagging (MVAR = MW x 0.5)
DG MEGAVARS, 1E22-R012C	1.8 MVAR at 0.8 pf-lagging (MVAR = MW x 0.75)

NOTE: DG MEGAVARS, 1E22-R012C, is adjusted to obtain a 0.9 pf when operating with the Diesel connected to the grid. DG MEGAVARS, 1E22-R012C, is adjusted to obtain a 0.8 pf prior to opening the ALTN PFD SOURCE BRKR, EH1302, or PREFERRED SOURCE BRKR, EH1303, when separating EH13 from the grid.

HPCS Diesel Generator Control Panel, 1E22-P001

GENERATOR FREQUENCY, 1E22-R702	60 ± 1.2 Hz
BUS EH13 FREQUENCY, 1E22-R705	60 ± 1.2 Hz
GENERATOR VOLTS, 1E22-R707	4160 volts (min 3900 volts max 4400 volts)
GENERATOR AMPS, 1E22-R708	450 amps
BUS EH13 VOLTS, 1E22-R709	4160 volts
NORMAL SOURCE VOLTS, 1E22-R710	4160 volts
DG LOADING KILOWATTS, 1E22-R711	2800 KW (max)
DG LOADING KILOVARS, 1E22-R712	500 KVAR out
DG FIELD VOLTS, 1E22-R713	65 volts
DG FIELD AMPS, 1E22-R714	1.2 amps

Local Engine Mounted Gauge Panel

FUEL PRESSURE	60 - 70 psig
LUBE OIL PRESSURE	80 psig
ELECTRIC TACHOMETER	900 rpm
FUEL OIL TEMPERATURE	<100°F
LUBE OIL TEMPERATURE	<215°F
SERVICE WATER TEMPERATURE IN	35 - 65°F
JACKET WATER TEMPERATURE OUT	170°F
CYLINDER TEMPERATURE	<1000°F
CYLINDER TEMPERATURE (average)	<1000°F
JACKET WATER TEMPERATURE IN	165°F

5.1 Transferring Bus EH13 to the Diesel Generator (Remote)

NOTE: If a Div 3 LOCA signal is present, the Div 3 Diesel Generator can not be paralleled to the grid.

1. Verify the Diesel Generator is running per Manual Startup from Standby Readiness.

2. Deleted.

NOTE: The following is performed at ECCS Benchboard, 1H13-P601.

2a. If the Diesel was started locally, place DIESEL CONTROL TRANSFER in REMOTE.

3. Place SYNC SEL SWITCH in one of the following positions, as applicable:

   a. TH1 - if Brkr EH1303; PREFERRED SOURCE BRKR, is closed.
   b. TH21 - if Brkr EH1302; ALTN PFD SOURCE BRKR, is closed.

4. Adjust DIESEL GEN VOLTAGE REGTR to match BUS EH13 VOLTS RUNNING, 1R22-R022C, with INCOMING, 1R22-R021C.

5. Adjust DIESEL GEN GOVERNOR such that SYNCHROSCOPE, 1E22-R022C, is moving slow in the FAST direction.

6. With SYNCHROSCOPE, 1E22-R022C, moving slow in the FAST direction, at approximately the 2 minutes to 12 o'clock position (synchroscope lights are brightest), perform the following in succession:

   a. Take Brkr EH1301; DIESEL GEN BRKR, to close.
   b. Take DIESEL GEN GOVERNOR to RAISE to achieve approximately 0.1 MW on DG LOADING MEGAWATTS, 1E22-R013C.

7. Place SYNC SEL SWITCH in OFF.

8. If it is desired to operate the Diesel Generator in parallel with the grid (for example, while performing loaded runs) exit this section and operate per Operations in Parallel with the Grid.

NOTE: Bus EH13 loads are approximately 2.2 MW if the HPCS Pump is running and 0.15 MW if the HPCS Pump is not running.

9. Adjust Generator load with the DIESEL GEN GOVERNOR to achieve the approximate loading of Bus EH13.

10. Adjust DG LOADING MEGAVARS, 1E22-R012C, using DIESEL GEN VOLTAGE REGTR as necessary to to obtain a .8 lagging power factor such that MVAR = MW x (0.75).

11. Open the applicable closed breaker:

    a. Brkr EH1302; ALTN PFD SOURCE BRKR.
    b. Brkr EH1303; PREFERRED SOURCE BRKR.

5.2 Transferring Bus EH13 to the Diesel Generator (Local)

NOTE: If a Div 3 LOCA signal is present, the Div 3 Diesel Generator can not be paralleled to the grid.

NOTE: No provisions are made for opening Brkr EH1302, ALTN PFD SOURCE BRKR locally from HPCS Diesel Generator Control Panel, 1E22-P001. If Bus EH13 is supplied from the Alternate Preferred Source, the Remote Transfer section should be used.

1. Verify the Diesel Generator is running per Manual Startup from Standby Readiness.

2. If the Diesel was started remotely, place DIESEL CONTROL TRANSFER in LOCAL at ECCS Benchboard, 1H13-P601.

NOTE: The following is performed at 1E22-P001.

3. Place DIESEL GEN BRKR EH1301 SYNCHRONIZING in GEN BUS.

4. Select the same Ø to Ø position on the following switches:

   a. GEN VOLTS 1E22-R707 SELECTOR.
   b. BUS EH13 VOLTS 1E22-R709 SELECTOR.

5. Adjust DIESEL GEN VOLTAGE REGTR to match GENERATOR VOLTS, 1E22-R707, and BUS EH13 VOLTS, 1E22-R709.

6. Adjust DIESEL GEN GOVERNOR such that the SYNCHROSCOPE, 1E22-R706, is moving slow in the FAST direction.

7. With SYNCHROSCOPE, 1E22-R706, moving slow in the FAST direction, at approximately the 2 minutes to 12 o'clock position (synchroscope lights are brightest), perform the following in succession:

   a. Take Brkr EH1301; DIESEL GEN BRKR, to close.
   b. Take DIESEL GEN GOVERNOR to RAISE to achieve approximately 100 KW on DG LOADING KILOWATTS, 1E22-R711.

8. Place DIESEL GEN BRKR EH1301 SYNCHRONIZING in OFF.

9. If it is desired to operate the Diesel Generator in parallel with the grid (for example, while performing loaded runs) exit this section and operate per Operations in Parallel with the Grid.

NOTE: Bus EH13 loads are approximately 2200 KW if the HPCS Pump is running and 150 KW if the HPCS Pump is not running.

10. Adjust Generator load with the DIESEL GEN GOVERNOR to achieve the approximate loading of Bus EH13.

11. Adjust DG LOADING KILOVARS, 1E22-R712, using DIESEL GEN VOLTAGE REGTR as necessary to to obtain a .8 lagging power factor such that KVAR = KW x (0.75).

12. Take Brkr EH1303; PREFERRED SOURCE BRKR to TRIP.

5.3 Operations in Parallel with the Grid

1. If operating the Diesel Generator locally:

   a. Adjust Generator load using DIESEL GEN GOVERNOR as necessary to achieve the desired DG LOADING KILOWATTS, 1E22-R711, maintaining between 100 and 2800 KW.
   b. Adjust Generator voltage using the DIESEL GEN VOLTAGE REGTR as necessary to obtain a .9 lagging power factor such that KVAR = KW x (0.5).

c. When it is desired to terminate parallel operations with the grid locally, perform the following:

1) If Bus is to be supplied from the Preferred or Alternate Preferred Source perform the following:

a) Adjust the DIESEL GEN GOVERNOR to achieve 50 to 100 KW on DG LOADING KILOWATTS, 1E22-R711.
b) Adjust the DIESEL GEN VOLTAGE REGTR as necessary to obtain 90 to 100 KVAR on DG LOADING KILOVARS, 1E22-R712.
c) Take Brkr EH1301; DIESEL GEN BRKR, to TRIP
d) Shutdown the Div 3 Diesel Generator to the desired configuration.

2) If Bus is to be supplied from the Diesel Generator perform the following:

NOTE: No provisions are made for opening Brkr EH1302, ALTN PFD SOURCE BRKR locally from HPCS Diesel Generator Control Panel, 1E22-P001.

NOTE: Bus EH13 loads are approximately 2200 KW if the HPCS Pump is running and 150 KW if the HPCS Pump is not running.

a) Adjust the DIESEL GEN GOVERNOR to achieve the approximate loading of Bus EH13.
b) Adjust the DIESEL GEN VOLTAGE REGTR as necessary to obtain DG LOADING KILOVARS, 1E22-R712, such that KVAR = KW x (0.75).
c) Take Brkr EH1303; PREFERRED SOURCE BRKR to TRIP.

2. If operating the Diesel Generator remotely:

a. Adjust Generator load using the DIESEL GEN GOVERNOR as necessary to achieve the desired DG LOADING MEGAWATTS, 1E22-R013C, maintaining between 0.1 and 2.8 MW.
b. Adjust Generator voltage using the DIESEL GEN VOLTAGE REGTR as necessary to obtain a 0.9 lagging power factor such that MVAR = MW x (0.5).
c. When it is desired to terminate parallel operations with the grid perform the following:

1) If Bus is to be supplied from the Preferred or Alternate Preferred Source perform the following:

a) Adjust Generator load using the DIESEL GEN GOVERNOR to achieve 0.05 to 0.1 MW on DG LOADING MEGAWATTS, 1E22-R013C.
b) Adjust DIESEL GEN VOLTAGE REGTR to obtain 0.09 to 0.1 MVAR on DG LOADING MEGAVARS, 1E22-R012C.

c) Take Brkr EH1301; DIESEL GEN BRKR, to TRIP.
d) Shutdown the Div 3 Diesel Generator to the desired configuration.

2) If Bus is to be supplied from the Diesel Generator perform the following:

NOTE: Bus EH13 loads are approximately 2200 KW if the HPCS Pump is running and 150 KW if the HPCS Pump is not running.

a) Adjust DIESEL GEN GOVERNOR to achieve the approximate loading of Bus EH13.
b) Adjust DIESEL GEN VOLTAGE REGTR to obtain DG LOADING MEGAVARS, 1E22-R012C, such that MVAR = MW x (0.75)
c) Open the applicable closed breaker:

- Brkr EH1302; ALTN PFD SOURCE BRKR.
- Brkr EH1303; PREFERRED SOURCE BRKR.

5.4 Transferring Bus EH13 to the Preferred or Altn Pfd Source from the Diesel Generator (Remote)

NOTE: The following is performed at ECCS Benchboard, 1H13-P601.

1. If the Diesel Generator is being controlled locally, place DIESEL CONTROL TRANSFER in REMOTE.

2. Perform one of the following as applicable:

a. If placing Bus EH13 on the Preferred Source, place SYNC SEL SWITCH in TH1, or,
b. If placing Bus EH13 on the Altn Pfd Source, place SYNC SEL SWITCH in TH21.

3. Adjust DIESEL GEN VOLTAGE REGTR to match BUS EH13 VOLTS RUNNING, 1R22-R022C, with INCOMING, 1R22-R021C.

4. Adjust DIESEL GEN GOVERNOR such that SYNCHROSCOPE, 1E22-R022C, is moving slow in the FAST direction.

5. With SYNCHROSCOPE, 1E22-R022C, moving slow in the FAST direction, at approximately the 2 minutes to 12 o'clock position (synchroscope lights are brightest), perform one of the following as applicable:

NOTE: When the Preferred or Altn Pfd Source Breaker is closed, the indicated generator load should decrease.

a. If placing Bus EH13 on the Preferred Source, take Brkr EH1303; PREFERRED SOURCE BRKR, to CLOSE.
b. If placing Bus EH13 on the Altn Pfd Source, take Brkr EH1302; ALTN PFD SOURCE BRKR, to CLOSE.

8. Perform the following concurrently:

   a. Adjust DIESEL GEN GOVERNOR to achieve 50 to 100 KW on DG LOADING KILOWATTS, 1E22-R611.
   b. Adjust DIESEL GEN VOLTAGE REGTR to achieve 0 to 100 KVAR (lagging) on DG LOADING KILOVARS, 1E22-R712.

9. Take Brkr EH1301; DIESEL GEN BRKR to TRIP.

10. Shutdown Div 3 Diesel Generator, as required.

5.6 Live Bus Transfer of Bus EH13

NOTE: Live Bus Transfers must be performed from the Control Room due to no provisions for paralleling the Diesel Generator with the Alternate Preferred Source locally.

1. Perform the following sections in sequence:

   a. Transferring Bus EH13 to the Diesel Generator (Remote).
   b. Transferring Bus EH13 to the Preferred or Altn Pfd Source from the Diesel Generator (Remote).

6.0 SHUTDOWN

The Division 3 Diesel Generator will automatically shutdown when one or more of the following protective trips occur when starting or operating without a LOCA signal. The protective trip must be reset at panel 1E22-P0001 prior to a restart.

- Reverse Power
- Instantaneous Overcurrent
- Generator Neutral Ground Fault
- Overcrank (> 20 seconds)
- High Jacket Water Temperature (208°F)
- Low Lube Oil Pressure (16 psi)
- Overspeed (990 rpm)
- Generator Differential Overcurrent

The Division 3 Diesel Generator will automatically shutdown when starting or operating with a LOCA signal only on the Generator Differential Overcurrent or Overspeed protective trips.

When the LOCA signal is reset, the Diesel Generator protective trip system will return to full operation.

6.1 Shutdown to Standby Readiness (Remote)

1. If operating the Diesel Generator locally, place DIESEL CONTROL TRANSFER in REMOTE at ECCS Benchboard, 1H13-P601.

3. Verify LOCK-OUT RELAY 86G reset at Bus EH13.

4. Place DIESEL CONTROL TRANSFER in REMOTE at ECCS Benchboard, 1H13-P601.

5. If not required to be operating, shutdown HPCS ESW to Standby Readiness per SOI-P45/49.

6. Shutdown Diesel Generator Building Ventilation System to Standby Readiness per SOI-M43.

7. Perform independent verification of required components.

8. Verify ventilation systems M21, M23/24, and M25/26 are placed in the mode required by plant conditions.

9. Deleted

6.3 Shutdown to Secured Status

1. Verify Diesel Generator is Shutdown to Standby Readiness.

2. Place DIESEL GENERATOR in PULL TO LOCK at ECCS Benchboard, 1H13-P601.

3. Place DIESEL GENERATOR MODE in MAINT at HPCS Diesel Generator Control Panel, 1E22-P001.

4. Perform independent verification of required components.

6.4 Emergency Shutdown

1. For remote trip, at ECCS Benchboard, 1H13-P601:

   a. Take Brkr EH1301; DIESEL GEN BRKR, to TRIP.
   b. Take DIESEL GENERATOR to STOP

2. For local trip:

   a. Momentarily depress EMERGENCY STOP at HPCS Diesel Generator Control Panel, 1E22-P001, or,
   b. Pull the Fuel Rack Lever away from the engine and hold until the diesel comes to a complete stop, or,
   c. Manually lift the Overspeed Trip Unit lever located near the governor to initiate an overspeed signal.

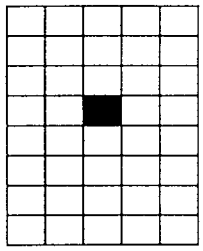
3. Perform Shutdown to Secured Status.

Computer Point ID
None

SER Address
None

DIV 3 DIESEL GENERATOR TROUBLE

D3



1.0 CAUSE OF ALARM

1. Any of the following local alarms on HPCS Diesel Generator Control Panel, 1E22-P001:

PROTECTIVE RELAYING LOST	FAIL TO START/RUN
GEN HTR OVLD/PWR LOSS	OVERSPEED
LOW TURBO LUBE OIL PRESSURE	LOW FUEL LEVEL
RESTRICTED FUEL OIL FILTER	CRANKCASE PRESS HIGH
RESTRICTED LUBE OIL FILTER	HIGH LUBE OIL TEMPERATURE
HIGH WATER TEMPERATURE	CHARGER FAILURE
LOW EXPANSION TANK WATER LEVEL	ENGINE TRIPPED
LOW COOLING WATER PRESSURE	MAIN FUEL PUMP FAILURE
JKT WTR KPWRM HTR OVLD/PWR LOSS	LOW LUBE OIL TEMPERATURE
LOW STARTING AIR PRESS	CONTROL POWER FAILURE
START AIR PRESS OVLD/PWR LOSS	HIGH STATOR TEMPERATURE
HIGH DEWPOINT 1E22-D5000A	CIRC OIL PUMP OVLD/PWR LOSS
HIGH DEWPOINT 1E22-D5000B	RESERVE FUEL PUMP FAILURE
	LOW LUBE OIL PRESSURE

2. Alarm could also be caused by power loss to P001 local annunciators rendering all local alarms inoperable.

2.0 AUTOMATIC ACTION

None

3.0 IMMEDIATE OPERATOR ACTION

None

4.0 SUBSEQUENT OPERATOR ACTION

1. Refer to ARI-E22-P001.

2. If no alarms are indicated locally, annunciator power is lost. Contact I&C Section to replace fuses.

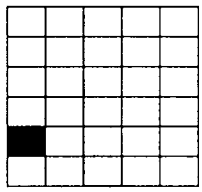
4.1 Technical Specifications

1. Technical Specifications could be entered depending upon the cause and extent of equipment inoperability.

Computer Point ID
None

SER Address
None

HIGH WATER TEMPERATURE



E1

1.0 CAUSE OF ALARM

1. Jacket water temperature greater than 200°F as sensed by 1E22-N716.
2. High water temperature could be caused by:
   a. Malfunction of Div 3 DG Jacket Wtr Temp Control Vlv, 1E22-F548
   b. HPCS ESW flow low
   c. Jacket water pump(s) failure
   d. Improper immersion heater operation with diesel in standby

2.0 AUTOMATIC ACTION

NOTE: This trip is bypassed if a LOCA signal is present

1. If jacket water temperature increases to >208°F:
   a. ENGINE LOCKOUT RELAY (K15) energizes, preventing further diesel starts.
   b. Diesel Generator, 1E22-S001, trips.
   c. DIESEL GEN BRKR, EH1301, trips open.

3.0 IMMEDIATE OPERATOR ACTION

1. If not required to ensure adequate core cooling, shutdown the Diesel Generator per SOI-E22B.

4.0 SUBSEQUENT OPERATOR ACTION

1. Verify proper operation of ESW per SOI-P45/49.

2. If the Diesel Generator tripped and the cause of high jacket water temperature has been corrected, perform the following:

   a. Depress the ENGINE TRIP RESET (ST) pushbutton at 1E22-P001 to reset the high water temperature relay (K12).
   b. Reset ENGINE LOCKOUT RELAY (K15).
   c. Manually start the Diesel Generator per SOI-E22B.

3. If Diesel Generator was in Standby Readiness, verify ENGINE HEATER, 1E22-D010, is de-energized. If necessary, manually operate heater per SOI-R46/E22B.

4.1 Technical Specifications

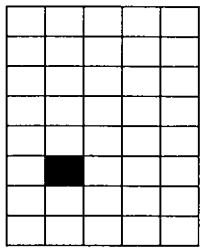
1. Technical Specifications will be entered upon continued degradation of this parameter.

Computer Point ID
None

SER Address
None

DG TRIP
JACKET WATER
TEMP HIGH

F2



1.0 CAUSE OF ALARM

1. Diesel jacket water temperature >208°F as sensed by 1E22-N717.

2. High jacket water temperature could be caused by:

   a. Low HPCS ESW flow
   b. Temperature control valve malfunction
   c. Jacket water pump malfunction

2.0 AUTOMATIC ACTION

NOTE: This trip is bypassed if LOCA signal is present.

1. ENGINE LOCKOUT RELAY (K15) energizes, preventing further diesel starts.
2. DIESEL GENERATOR, 1E22-S001, trips.
3. DIESEL GEN BRKR, EH1301, trips open.

3.0 IMMEDIATE OPERATOR ACTION

1. Shutdown DIESEL GENERATOR per SOI-E22B, if not required to assure adequate core cooling.

4.0 SUBSEQUENT OPERATOR ACTION

1. Enter ONI-R22-1, Loss of an Essential and/or a Stub 4.16 KV Bus.

2. When the cause of high jacket water temperature is corrected, perform the following:

   a. Depress RESET switch S7 at 1E22-P001 to reset the high water temperature relay (K12).
   b. Reset ENGINE LOCKOUT RELAY (K15) at 1E22-P001.
   c. Start up DIESEL GENERATOR, 1E22-S001, or place in Standby Readiness per SOI-E22B, as required.

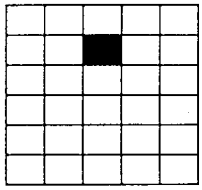
4.1 Technical Specifications

1. 3.8.1, AC Sources
   {3.8.1, AC Sources - Operating}
   {3.8.2, AC Sources - Shutdown}

Computer Point ID
None

SER Address
None

ENGINE
TRIPPED



B3

1.0 CAUSE OF ALARM

1. ENGINE TRIP LOCKOUT RELAY (K15) energized due to one or more of the following:

   a. Depressing EMERGENCY STOP Switch, 1E22-S19
   b. Diesel jacket water temperature high
   c. Diesel lube oil pressure low
   d. Diesel overspeed
   e. Diesel not up to 150 rpm within 20 seconds after receipt of a start signal

NOTE: Lockout relay (K15) will not trip on overcrank condition if engine attempts to auto-start on LOCA signal.

2.0 AUTOMATIC ACTION

1. The following normal trip signals will not trip the diesel generator if a LOCA signal is present:

   a. Diesel jacket water temperature high
   b. Diesel lube oil pressure low
   c. Diesel overcrank

3.0 IMMEDIATE OPERATOR ACTION

None

4.0 SUBSEQUENT OPERATOR ACTION

None

4.1 Technical Specifications

1. 3.8.1, A.C. Sources
   {3.8.1, AC Sources - Operating}
   {3.8.2, AC Sources - Shutdown}

10CFR55.45(a) 6, 8 JPM No. 63 Rev. 1

SRO X
RO X
Other

JOB PERFORMANCE MEASURE

Title: Parallel Div. III Diesel - Operations in Parallel with the Grid

Task No. 006-519-01-01 K/A Catalog 264000

K/A Rating 3.7/3.7 K/A Number A4.04

Evaluation Method P X S

Evaluation Location P S X CR

Approximate Completion Time: 10 minutes; Time Critical Y N X

Initial Conditions:

HPCS Diesel Generator manually started from the Control Room
Breaker EH1303, Preferred Source Breaker, closed.
Breaker EH1301, Diesel Generator Breaker, open.

Tools, Equipment, Other Special Requirements:

See attached simulator set-up sheet.

References:

SOI-E22B, Rev. 4, TCN-11

Standard (Terminating Cue):

Div. III Diesel Generator operating in parallel with grid, loaded to approximately 1 MW, pf at .9 lagging, MVAR = .5

Critical Elements: (*)

2, 3, 4, 5, 6, 8, 9

Initiating Cue:

Unit Supervisor directs S.O. to synchronize the HPCS Diesel Generator to Bus EH13, parallel to the Preferred Source, and load Div. III Diesel Generator to approximately 1 MW.

Paul K Hetrick — Prepared
D Johnson — Reviewed
Mike Wesley — Approved
10/25/91 — Date

E22B-4

Initial Conditions:

HPCS Diesel Generator manually started from the Control Room
Breaker EH1303, Preferred Source Breaker, closed.
Breaker EH1301, Diesel Generator Breaker, open.

Initiating Cue:

Unit Supervisor directs S.O. to synchronize the HPCS Diesel Generator to Bus EH13, parallel to the Preferred Source, and load Div. III Diesel Generator to approximately 1 MW.

Performance Checklist	Standard
1. Verify the HPCS Diesel Generator is running.	1. White light above Diesel Generator symbol on, Diesel Generator Field Amps indication, Diesel Generator Speed indication.
*2. PLACE SYNC SEL SWITCH IN TH1 position.	2. Synchroscope begins rotation, synchroscope light begins to flash on and off, Diesel Generator voltage indication.
*3. Adjust DIESEL GEN VOLTAGE REGTR to match BUS EH13 VOLTS RUNNING, R22-R022C with INCOMING, R22-R021C.	3. Meters R022C and R021C approximately matched.
*4. Adjust DIESEL GEN GOVERNOR such that SYNCHROSCOPE, 1E22-R022C is moving slow in the FAST direction.	4. Panel indications of synchroscope rotating slow in a clockwise direction.
*5. At 2 minutes to midnight position on Synchroscope (moving slow in FAST direction), close DIESEL GEN BRKR, EH1301.	5. Breaker closed (red lamp on, green lamp off), sychroscope needle stops at midnight position.
*6. Take DIESEL GEN GOVERNOR to RAISE to achieve approx. 0.1 MW on DG LOADING MEGAWATTS , 1E22-R013C.	6. Panel indication of load increase on R013C. (Step should be performed in quick succession after previous step). Approx. 0.1 MW (Critical go to Raise).
7. Place SYNC SEL SWITCH in OFF.	7. Synchroscope de-energized, sychroscope lights out.
*8. Adjust generator load using DIESEL GEN. GOVERNOR to achieve desired DG LOADING MEGAWATTS, 1E22-R013C of approx. 1 MW.	8. Load indication on R013C increases to approx. 1.0 MW ± .1
*9. Adjust generator voltage using DIESEL GEN VOLTAGE REGTR as necessary to obtain a	9. Voltage properly adjusted to obtain 0.9 lagging pf (MVAR = MW x 0.5; MVAR = 1E22R012C approx. .5± .1

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Facility: PERRY Task No: 239-527-01-01

JPM No: B.1.c

Task Title: **Opening Main Steam Isolation Valves (MSIVs)**

K/A Reference: 239001 A4.01 (4.2 / 4.0)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Task Standard:	**The MSIVs are opened in accordance with SOI-B21.**
Required Materials:	Simulator setup is per specified instructions for this NRC exam.
General References:	SOI-B21, Nuclear Steam Supply Shutoff, Automatic Depressurization, and Nuclear Steam Supply Shutoff Systems Revision 6, PIC 11
Initial Conditions:	**The plant is in MODE 2. A surveillance error caused the MSIVs and inboard MSL drain valves to close 30 minutes ago. At the time of valve closure, reactor temperature was 360 degrees F. The NS4 System is back in Standby Readiness with the MSIV isolation signal reset per SOI-B21, Section 4.1, Nuclear Steam Supply Shutoff System Startup to Standby Readiness. The RFBP on the Low Flow Controller is available for reactor water level control. Main Condenser vacuum is being maintained by the Mechanical Vacuum Pumps. Reactor temperature is slowly heating up due to decay heat.**
Initiating Cue:	**The Unit Supervisor directs you to open the Main Steam Isolation Valves (MSIVs) in accordance with SOI-B21.**
Time Critical Task:	YES/NO X
Validation Time:	40 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD CAPITAL** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Verify NS4 in Standby Readiness.

STANDARD: NS4 confirmed to be in Standby Readiness per SOI-B21, Section 4.1.

COMMENTS: 1. Candidate references SOI-B21, Section 4.3.

2. Nuclear Steam Supply Shutoff System Startup to Standby Readiness was reported as completed in the Initial Condition summary.

SAT / UNSAT START TIME: _____

_____ 2. Verify RPV Head Vent shifted to MSL A if a vacuum exists in the Main Condenser.

STANDARD: Confirm: Red light ON for B21-F005, RX HEAD TO MSL A VENT VALVE.
Green light ON for B21-F002, RX HEAD TO DW FIRST VENT VALVE.
Red and Green lights OFF for B21-F001, RX HEAD TO DW SECOND VENT VALVE.

COMMENTS: 1. RPV Head Vent was already lined to MSL A.

2. B21-F001 is normally in the CLOSE position with its MCC disconnect OPEN.

SAT / UNSAT

---

* 3. **If average RPV temperature, from ERIS or 1B33-R604, is greater than 200 degrees F, perform the following:**

a. Verify that a source of RPV makeup, RCIC or Feedwater is available.

b. Adjust the PRESS ST PT to 200-400 psig above reactor pressure not to exceed 920 psig (whichever is greater) to prevent opening Turbine Bypass Valves.

STANDARD: Average RPV temperature is confirmed to be greater than 200 degrees F and:

a. Feedwater is confirmed to be available as a source of RPV makeup

b. PRESS ST PT is properly adjusted to 200-400 psig above reactor pressure

COMMENTS:

1. The availability of the Feedwater System was reported in the Initial Condition summary.

2. **NOTE: With RPV temperature > 200 degrees F, water in the RPV may flash into steam when MSIVs are opened. This has been observed to cause a 10" RPV level decrease with only a 10 psid differential.**

3. Candidate may use ICS P&ID B21/N11 (MN STM & DRNS) to assist with adjustment of PRESS ST PT. Screen provides a digital display of the Press Regulator Setpoint and Main Steam Line Sensed Pressure values.

3. Candidate observes that C85 Pressure Regulator Channel 'B' is in control.

4. **If candidate reports the REGTR ERROR to the Unit Supervisor, explain to the candidate that this is expected due to the MSIVs being closed and MSL 'sensed pressure' being downscale. The REGTR ERROR light will extinguish when the MSLs are re-pressurized (i.e., the MSIVs are re-opened.)**

5. Adjustment of the PRESS ST PT 200-400 psig above reactor pressure will prevent any Turbine Bypass Valve from opening when the MSIVs are opened (potential exists for a pressure surge).

SAT / UNSAT

---

* 4. Open outboard MSIVs as follows:

a. If RPV pressure is ≥ 15 psig, verify the inboard MSIVs closed.

b. Verify the following valves open:

1). MSL B SHUTOFF BEFORE SEAT DRN, 1N22-F420B
2). MSL B SHUTOFF, 1N11-F020B
3). MSL D SHUTOFF BEFORE SEAT DRN, 1N22-F420D
4). MSL D SHUTOFF, 1N11-F020D
5). MSL A SHUTOFF BEFORE SEAT DRN, 1N22-F420A
6). MSL A SHUTOFF, 1N11-F020A
7). MSL C SHUTOFF BEFORE SEAT DRN, 1N22-F420C
8). MSL C SHUTOFF, 1N11-F020C

c. Open the Outboard MSIVs by placing the following control switches in AUTO:

1). MSL B OTBD MSIV, 1B21-F028B
2). MSL D OTBD MSIV, 1B21-F028D
3). MSL A OTBD MSIV, 1B21-F028A
4). MSL C OTBD MSIV, 1B21-F028C

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

STANDARD:

a. Green light ON and control switch in CLOSE for:

1). MSL B INBD MSIV, 1B21-F022B
2). MSL D INBD MSIV, 1B21-F022D
3). MSL A INBD MSIV, 1B21-F022A
4). MSL C INBD MSIV, 1B21-F022C

b. Red light ON for:

1). MSL B SHUTOFF BEFORE SEAT DRN, 1N22-F420B
2). MSL B SHUTOFF, 1N11-F020B
3). MSL D SHUTOFF BEFORE SEAT DRN, 1N22-F420D
4). MSL D SHUTOFF, 1N11-F020D
5). MSL A SHUTOFF BEFORE SEAT DRN, 1N22-F420A
6). MSL A SHUTOFF, 1N11-F020A
7). MSL C SHUTOFF BEFORE SEAT DRN, 1N22-F420C
8). MSL C SHUTOFF, 1N11-F020C

c. Red light ON and control switch in AUTO for:

1). MSL B OTBD MSIV, 1B21-F028B
2). MSL D OTBD MSIV, 1B21-F028D
3). MSL A OTBD MSIV, 1B21-F028A
4). MSL C OTBD MSIV, 1B21-F028C

COMMENTS: All MSL SHUTOFF BEFORE SEAT DRN and MSL SHUTOFF valves are normally in the OPEN position.

SAT / UNSAT

* 5. Open inboard MSIVs as follows:

a. Hold INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021, in CLOSE until closed.

b. Take MSL DRN & MSIV BYP INBD ISOL, 1B21-F016, to OPEN.

c. Take MSL DRN & MSIV BYP OTBD ISOL, 1B21-F019, to OPEN.

d. If RPV pressure exceeds 15 psig, perform the following:

1) Throttle MSIV BYP VLV FOR MST LINE WARM UP, 1B21-F020, as necessary to achieve a heatup rate of less than 100 degrees F/hr as determined on MSL A&B TEMP, 1N11-R065, and MSL C&D TEMP, 1N11-R060.

e. When MAIN STEAM LINE PRESSURE A, B, C, or D; 1N11-R011A, B, C, or D; is within 50 psid of reactor pressure, perform the following:

1) Open MSL B INBD MSIV, 1B21-F022B, by placing its control switch in AUTO.
2) Open MSL D INBD MSIV, 1B21-F022D, by placing its control switch in AUTO.
3) Open MSL A INBD MSIV, 1B21-F022A, by placing its control switch in AUTO.
4) Open MSL C INBD MSIV, 1B21-F022C, by placing its control switch in AUTO.

f. Hold MSIV BYP VLV FOR MST LINE WARMUP, 1B21-F020, in CLOSE until closed.

g. Hold INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021, in OPEN until open.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

STANDARD:

a. Green light ON for INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021.

b. Red light ON for MSL DRN & MSIV BYP INBD ISOL, 1B21-F016.

c. Red light ON for MSL DRN & MSIV BYP OTBD ISOL, 1B21-F019.

d. Red and Green light ON for MSIV BYP VLV FOR MST LINE WARM UP, 1B21-F020.

e. Red light ON for:

1). MSL B INBD MSIV, 1B21-F022B
2). MSL D INBD MSIV, 1B21-F022D
3). MSL A INBD MSIV, 1B21-F022A
4). MSL C INBD MSIV, 1B21-F022C

f. Green light ON for MSIV BYP VLV FOR MST LINE WARM UP, 1B21-F020.

g. Red light ON for INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.c

COMMENTS:

1. **RPV level will not reach Level 3 during this step.**

2. **As the Unit Supervisor, inform the candidate that he may operate the Feedwater System as necessary to maintain RPV water level.**

3. **NOTE: At reactor pressures of > 150 psig, special restrictions are placed on the opening of 1B21-F016 and 1B21-F019. Refer to the Precautions and Limitations section for these restrictions.**

   In accordance with Precaution and Limitation 9c:

   Time = (RX/2) / (40 F/hour) where RX = temperature of the reactor at the time when the valves were closed.

   Time = (360/2) / (40 F/hour) = (180/40) = 4.5 hours

   Per the Initial Conditions, the valves were closed 30 minutes ago; therefore, they may be re-opened at this time.

4. **NOTE: When RPV pressure exceeds 15 psig, do not exceed 100 degree F/hr heat up rate.**

   MSL temperature will have only decreased from ~400 degrees F to ~ 320 degrees F since the MSIVs closed; therefore, this heat up rate limitation should not be exceeded.

5. Candidate observes MSL temperature (~ 300-350 F) on recorders 1N11-R065, MSL A&B TEMP, and 1N11-R060, MSL C&D TEMP.

6. **NOTE: A differential pressure of 50 psid or less is required prior to opening the inboard MSIVs.**

7. Candidate observes MSL pressure on meters 1N11-R011A, B, C, and D, MAIN STEAM LINE PRESSURE A, B, C, and D.

SAT / UNSAT

---

* 6. **Adjust the PRESS ST PT to 150 psig or 25-50 psig above MN ST PRESS indication, 1C85-R715A or 1C85-R715B, for the channel selected, not to exceed 920 psig (whichever is greater).**

STANDARD: PRESS ST PT is properly adjusted to 25-50 psig above MN ST PRESS indication, 1C75-R715A.

COMMENTS:
1. Candidate observes that C85 Pressure Regulator Channel 'B' is in control.
2. Main Turbine Bypass Valves will remain closed because the PRESS ST PT is greater than reactor pressure.
3. **As the Unit Supervisor, inform the candidate that you will assign another operator to monitor and control reactor water level and pressure at the H13-P680 panel.**

SAT / UNSAT

_____ 7. Perform independent verification of the required components.

STANDARD: Independent verification of the required component is performed.

COMMENTS:
1. Independent Verification form can be obtained from the file cabinet located by panel H13-P970.
2. **As the Unit Supervisor, when the candidate has completed the first verification, then inform him that you will assign another operator to complete the second verification.**

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: Main Steam Isolation Valves (MSIVs) have been opened.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.c

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE WORKSHEET
Attachment #1

Initial Conditions:	The plant is in MODE 2. A surveillance error caused the MSIVs and inboard MSL drain valves to close 30 minutes ago. At the time of valve closure, reactor temperature was 360 degrees F. The NS4 System is back in Standby Readiness with the MSIV isolation signal reset per SOI-B21, Section 4.1, Nuclear Steam Supply Shutoff System Startup to Standby Readiness. The RFBP on the Low Flow Controller is available for reactor water level control. Main Condenser vacuum is being maintained by the Mechanical Vacuum Pumps. Reactor temperature is slowly heating up due to decay heat.
Initiating Cue:	The Unit Supervisor directs you to open the Main Steam Isolation Valves (MSIVs) in accordance with SOI-B21.

Perry JPM B.1.c

Open MSIVs

Reference Materials

Valve	Pressure Relief Setpoint	Safety Relief Setpoint	Low Low Set Setpoint Open	Low Low Set Setpoint Close
Main Steam Line A				
58° ADS SRV, 1B21-F041A	1123	1165		
40° SRV, 1B21-F051A	1113	1190	1113	946
22° ADS SRV, 1B21-F041E	1123	1165		
Main Steam Line C'				
166° SRV, 1B21-F041C	1123	1165		
148° ADS SRV, 1B21-F051C	1113	1190	1073	936
130° SRV, 1B21-F047C	1123	1180		
112° ADS SRV, 1B21-F051G	1113	1190	1113	946
94° SRV, 1B21-F041G	1123	1165		
76° SRV, 1B21-F047G	1113	1180		

5. Following the opening of SRVs due to a reactor isolation event, those valves affected by the Low Low Set function will stay open longer and re-close at a lower pressure than the ones without this feature. If pressure increases after all valves have reset, SRVs 1B21-F051C and 1B21-F051D will cycle at their Low Low Set setpoints to remove decay heat. Manual cycling of other SRVs should be conducted to prevent localized overheating of the Suppression Pool due to the cycling of these valves.

6. The Main Condenser low vacuum switches, MSL ISOL CH A, B, C, and D, 1B21H-S24A, B, C and D, shall not be placed in BYPASS during power operations.

7. Upon any SRV actuation, evacuate the Containment immediately.

8. Due to unacceptable stresses on small piping which interconnects the four main steam lines, with Reactor pressure > 20 psig, do not close a MSL A(B,C,D) SHUTOFF, 1N11-F020A(B,C,D), with the associated inboard and/or outboard MSIVs closed.

9. Containment penetration PEN #423 has not been analyzed for the sudden opening initiation of flow. Therefore, prior to opening 1B21-F016, 1B21-F019, 1B21-F033 or 1B21-F020, one of the following conditions must be met:

   a. Reactor pressure is $\leq$150 psig
   b. Flow through the containment penetration already exists. Flow through the containment penetration exists if both 1B21-F016 and 1B21-F019 are open and either 1B21-F033 is open or reactor power is greater than 50% rated and 1B21-F020 is open.

c. The time since flow through the containment penetration stopped is less than or equal to the time derived from the following formula:

TIME = (RX/2)/(40°F/hour)

Where:
RX = Temperature (°F) of the Reactor at the time when the valves were close

d. The temperature of the Reactor is less than or equal to the temperature of the penetration derived from the following formula:

TEMP = RX - (TIME X (40°F/hour))

Where:
RX = Reactor temperature (°F) at the time the valves were closed

TIME = Time that has elapsed since the valve(s) were closed.

10. 1B21-F016, 1B21-F019, and either 1B21-F033 or 1B21-F020 should be maintained open at all times when in Mode 1, 2, or 3 to prevent thermal transients on containment penetration PEN #423.

11. MSIV F028A(B,C,D) Steam Leakoff Isolation, 1B21-F027A(B,C,D), should remain open to provide a method for monitoring for stem leakoff on the Outboard MSIVs. If both of the following conditions exist, the associated MSIV F028A(B,C,D) Steam Leakoff Isolation, 1B21-F027A(B,C,D), should be closed until such time as the leaking MSIV packing can be replaced.

Conditions
- A plume is noted in the shield building annulus area; and - The associated computer point B21BA001(2,3,4) indicates >400°F.

12. Attachment 10, Reactor Pressure Vessel Instrument Channel Checks, provides a form to use for PAP-0201 required channel checks of RPV level instrumentation.

d. RX WATER SAMPLE VALVE B33-F019 LOGIC TEST, 1B21H-S71B.
e. RWCU LOGIC TEST, 1B21H-S72B.

3. Verify the following test switches in NORM on Ch C RPS Instrumentation & Auxiliary Relay Panel, 1H13-P693:

a. NS4 BOP ISOL INBD LOGIC TEST, 1B21H-S19C.
b. NS4 MSL DRN ISOL INBD LOGIC TEST, 1B21H-S20C.
c. RHR SYS ISOL VALVES LOGIC TEST, 1B21H-S21C.
d. RX WATER SAMPLE VALVE B33-F019 LOGIC TEST, 1B21H-S71C.
e. RWCU LOGIC TEST, 1B21H-S72C.

4. Verify the following test switches in NORM on Ch D RPS Instrumentation & Auxiliary Relay Panel, 1H13-P694:

a. NS4 BOP ISOL OTBD LOGIC TEST, 1B21H-S19D.
b. NS4 MSL DRN ISOL OTBD LOGIC TEST, 1B21H-S20D.
c. RHR SYS ISOL VALVES LOGIC TEST, 1B21H-S21D.
d. RX WATER SAMPLE VALVE B33-F020 LOGIC TEST, 1B21H-S71D.
e. RWCU LOGIC TEST, 1B21H-S72D.

5. Perform Nuclear Steam Supply Shutoff System Reset.

6. Perform independent verification of the required components.

4.2 Automatic Depressurization System Startup to Standby Readiness

1. Verify the Safety Related Instrument Air System (P57) in service and supplying air to the ADS SRV accumulators and the Non-ADS accumulator for SRV 1B21-F051D.

2. Verify the following control switches in NORM on ECCS Benchboard, 1H13-P601:

a. ADS A LOGIC INHIBIT, 1B21C-S34A.
b. ADS B LOGIC INHIBIT, 1B21C-S34B.

3. Perform Automatic Depressurization System Reset.

4.3 Opening Main Steam Isolation Valves (MSIV) <F01538, F01581>

NOTE: This section is performed at ECCS Benchboard, 1H13-P601.

1. Verify NS4 in Standby Readiness.

1a. Verify RPV Head Vent shifted to MSL A if a vacuum exists in the Main Condenser.

2. If average RPV temperature, from ERIS or 1B33-R604, is greater than 200°F, perform the following:

   NOTE: With RPV temperature > 200°F, water in the RPV may flash into steam when MSIVs are opened. This has been observed to cause a 10" RPV level decrease with only a 10 psid differential.

   a. Verify that a source of RPV makeup, RCIC or Feedwater, is available.
   b. Adjust the PRESS ST PT to 200-400 psig above Reactor Pressure not to exceed 920 psig (whichever is greater) to prevent opening Turbine Bypass Valves. <L00957>

3. Open outboard MSIVs as follows:

   a. If RPV pressure is ≥ 15 psig, verify the inboard MSIVs closed.
   b. Verify the following valves open:

      1) MSL B SHUTOFF BEFORE SEAT DRN, 1N22-F420B

      2) MSL B SHUTOFF, 1N11-F020B

      3) MSL D SHUTOFF BEFORE SEAT DRN, 1N22-F420D

      4) MSL D SHUTOFF, 1N11-F020D

      5) MSL A SHUTOFF BEFORE SEAT DRN, 1N22-F420A

      6) MSL A SHUTOFF, 1N11-F020A

      7) MSL C SHUTOFF BEFORE SEAT DRN, 1N22-F420C

      8) MSL C SHUTOFF, 1N11-F020C

   c. Open the Outboard MSIVs by placing the following control switches in AUTO:

      1) MSL B OTBD MSIV, 1B21-F028B

      2) MSL D OTBD MSIV, 1B21-F028D

      3) MSL A OTBD MSIV, 1B21-F028A

      4) MSL C OTBD MSIV, 1B21-F028C

4. Open inboard MSIVs as follows:

   a. Hold INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021, in CLOSE until closed.

****

CAUTION

At Reactor pressures of > 150 psig, special restrictions are placed on the opening of 1B21-F016 and 1B21-F019. Refer to the Precautions and Limitations section of this instruction for these restrictions.

****

b. Take MSL DRN & MSIV BYP INBD ISOL, 1B21-F016, to OPEN.
c. Take MSL DRN & MSIV BYP OTBD ISOL, 1B21-F019, to OPEN.

****

CAUTION

When RPV pressure exceeds 15 psig, do not exceed 100°F/hr heat up rate.

****

d. If RPV pressure exceeds 15 psig, perform the following:

1) Throttle MSIV BYP VLV FOR MST LINE WARM UP, 1B21-F020, as necessary to achieve a heatup rate of less than 100°F/hr as determined on MSL A&B TEMP, 1N11-R065, and MSL C&D TEMP, 1N11-R060.

****

CAUTION

A differential pressure of 50 psid or less is required prior to opening the inboard MSIVs.

****

NOTE: ERIS screen 121 provides the information required to perform the following step.

e. When MAIN STEAM LINE PRESSURE A, B, C, or D; 1N11-R011A, B, C, or D; is within 50 psid of Reactor pressure, perform the following:

1) Open MSL B INBD MSIV, 1B21-F022B, by placing its control switch in AUTO.

2) Open MSL D INBD MSIV, 1B21-F022D, by placing its control switch in AUTO.

3) Open MSL A INBD MSIV, 1B21-F022A, by placing its control switch in AUTO.

4) Open MSL C INBD MSIV, 1B21-F022C, by placing its control switch in AUTO.

f. Hold MSIV BYP VLV FOR MST LINE WARM UP, 1B21-F020, in CLOSE until closed.

g. Hold INBD MSIV BEFORE SEAT WARMUP DRN, 1B21-F021, in OPEN until open.

5. Adjust the PRESS ST PT to 150 psig or 25-50 psig above MN ST PRESS indication, 1C85-R715A or 1C85-R715B, for the channel selected, not to exceed 920 psig (whichever is greater).

6. Perform independent verification of the required components.

4.4 Automatic Initiation of the Nuclear Steam Supply Shutoff System

NOTE: The NS4 System sends signals to Containment and Drywell isolation valves in the following systems. The isolation restoration instructions are controlled by ONI-B21-4, Isolation Restoration.

- Nuclear Boiler System (B21)
- Reactor Recirculation System (Sampling) (B33)
- Plant Radiation Monitoring System (D17)
- Residual Heat Removal (E12)
- Reactor Core Isolation Cooling (E51)
- Reactor Water Cleanup (G33)
- Fuel Pool Cooling and Cleanup System (G41)
- Suppression Pool Cleanup System (G42)
- Liquid Radwaste System (G50)
- Liquid Radwaste Sump System (G61)
- Containment Vessel and Drywell Purge System (M14)
- Drywell Vacuum Relief System (M16)
- Containment Vacuum Relief System (M17)
- Combustible Gas Control System (M51)
- Condensate Transfer and Storage System (P11)
- Mixed Bed Demin and Distribution System (P22)
- Nuclear Closed Cooling (P43)
- Containment Vessel Chilled Water System (P50)
- Service Air System (P51)
- Instrument Air System (P52)
- Penetration Pressurization System (P53)
- Fire Protection System (P54)
- Nitrogen Supply System (P86)

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

Facility: PERRY Task No: 068-502-01-01
068-503-01-01
068-508-04-01
068-524-04-01

JPM No: B.1.d

Task Title: **Turbine Roll Following Turbine Trip (Quick Restart) Faulted**

K/A Reference: 245000 A3.02 (2.8 / 2.8) A4.06 (2.7 / 2.6)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

Task Standard:	**The Main Turbine is manually tripped due to the failure of bearing #3 during a quick restart of the Main Turbine in accordance with SOI-N32/39/41/51.**
Required Materials:	Simulator setup is per specified instructions for this NRC exam.
General References:	SOI-N32/39/41/51, Main Turbine – Generator and Turning Gear System Revision 0, PIC 22 ONI-N32, Turbine and/or Generator Trip Revision 4, PIC 08
Initial Conditions:	**Plant startup is in progress. PTI-N32-P0003, Main Turbine Overspeed Test, was successfully completed 15 minutes ago. All actions for ONI-N32, Turbine and/or Generator Trip have been completed. ONI-N32 has been exited. The Main Turbine is coasting down. Plant Management has given permission to restart the Main Turbine.**
Initiating Cue:	**The Unit Supervisor directs you to roll the Main Turbine to 1800 rpm in accordance with SOI-N32/39/41/51, Section 4.6, Turbine Roll Following Turbine Trip (Quick Restart). A Non-Licensed Operator is on station at the Turbine Front Standard to assist with the turbine roll.**
Time Critical Task:	YES/NO X
Validation Time:	40 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Verify the following initial conditions:

a. The cause of the Turbine Trip has been determined and corrected.
b. Less than 3 hours have elapsed since the turbine trip and the turbine never went on the jack or stopped.
c. Turbine bearing oil temperature is greater than 90 degrees F as read on MAIN TURBINE LUBE OIL TEMP, 1N34-R135 (LUBE OIL FM COOLER).
d. Plant Management permission has been obtained to restart the Main Turbine.
e. Jack CLOSED light is on.
f. Motor Suction Oil Pump is operating and Main Shaft Suction Pressure is at least 25 psig as read at front standard on Shaft Driven Pmp Press Indicator, 1N34-R182.
g. Turbine bearing oil pressure is greater than 15 psig as read on TURBINE OIL PRESSURE BRG HD, 1N34-R121.
h. Local indication of oil flow at each journal bearing drain line.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

STANDARD:

a. Confirm cause of turbine trip was due to performance of PTI-N32-P0003, Turbine Overspeed Test, and has been positively corrected.

b. Confirm it has been less than 3 hours since the turbine trip and that the turbine never went on the jack or stopped as observed by Red light OFF above Main Turbine Turning Gear control switch 1N39-C002 and Main Turbine speed is > 0 rpm as indicated on meter N21-R713, ICS BOP Screen-'Main Turbine', or ICS BOP Screen 'Main Turbine Bearings'.

c. Confirm Turbine bearing oil temperature is greater than 90 degrees F as read on MAIN TURBINE LUBE OIL TEMP, 1N34-R135 (LUBE OIL FM COOLER).

d. Confirm Plant Management permission has been obtained to restart the Main Turbine.

e. Confirm Green light ON for Jack CLOSED light.

f. Confirm Red light ON for Motor Suction Oil Pump and Main Shaft Suction Pressure is at least 25 psig as read at front standard on Shaft Driven Pmp Press Indicator, 1N34-R182.

g. Confirm Turbine bearing oil pressure is greater than 15 psig as read on TURBINE OIL PRESSURE BRG HD, 1N34-R121.

h. Confirm local indication of oil flow at each journal bearing drain line.

COMMENTS:

1. Candidate references SOI-N32/39/41/51, Section 4.6.

2. Initial Condition a, b, and d was reported as completed in the Initial Condition summary.

3. Simulator Driver will role-play as the Non-Licensed Operator for the entire evolution.

4. **Non-Licensed Operator, when requested, will report that Main Shaft Suction Pressure is 27 psig as read on Shaft Driven Pmp Press Indicator, 1N34-R182.**

5. **Non-Licensed Operator, when requested, will report that there is local indication of oil flow at each journal bearing drain line.**

SAT / UNSAT START TIME: _____

_____ 2. Station an operator at the Turbine Front Standard in communication with the Control Room operator.

STANDARD: Confirm an operator is stationed at the Turbine Front Standard in communication with the control room operator.

COMMENTS:
1. This was reported as completed in the Initial Condition summary.
2. It is an Operations expectation to monitor the startup of important components in the field; therefore it is an equipment safety step.

SAT / UNSAT

_____ 3. Press the TURBINE-TRIP button and verify the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights are on.

STANDARD: Press the Red TURBINE-TRIP button and confirm the Red lights ON for the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights.

COMMENTS:
1. The Main Turbine is already in the tripped condition; therefore, depressing the TURBINE TRIP button will have no effect.
2. The candidate may observe, using the valve position meters that the TSVs, TCVs, IVs, and ISVs are in the CLOSE position.

SAT / UNSAT

---

* 4. **Press and hold the TURBINE-RESET button until the RESET MECHANICAL and RESET ELECTRICAL lights are on, then release.**

STANDARD: Press and hold the black TURBINE-RESET button and verify the Green lights ON for the RESET MECHANICAL and RESET ELECTRICAL lights, then release the TURBINE-RESET button.

COMMENTS:

1. The RESET ELECTRICAL light will cycle several times before it finally remains on, then the candidate will release the TURBINE-RESET button.
2. **If the candidate releases the TURBINE-RESET button prematurely, then this is not a step failure.**

   As the Unit Supervisor, direct the candidate to re-perform the step and continue to press and hold the TURBINE-RESET button until the RESET MECHANICAL and RESET ELECTRICAL lights remain on.
3. The candidate may observe, using the valve position meters that the TSVs, TCVs, and IVs are in the CLOSE position and the ISVs are in the OPEN position.
4. The candidate may announce that alarm RPS TURB CONT V FAST CLOSE (H13-P680-5 (A5)) cleared (expected).
5. The candidate may observe the STARTING RATE-SLOW White light come on.

SAT / UNSAT

---

* 5. **Trip the Turbine Emergency Trip System (ETS) using the Manual Trip Handle (MTH) at the Turbine Front Standard.**

STANDARD: Contacts the Non-Licensed Operator to direct him to trip the Turbine Emergency Trip System (ETS) using the Manual Trip Handle (MTH) at the Turbine Front Standard.

COMMENTS: **Simulator Driver will toggle RF TC05 to TRIP in order to trip the Main Turbine locally.**

SAT / UNSAT

---

* 6. **Verify the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights are on.**

STANDARD: Verify the Red lights ON for the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights.

COMMENTS:
1. The candidate may observe, using the valve position meters that the TSVs, TCVs, IVs, and ISVs are in the CLOSE position.
2. The candidate may announce that alarm RPS TURB CONT V FAST CLOSE (H13-P680-5 (A5)) annunciated (expected).
3. The candidate may observe the STARTING RATE-SLOW White light go off.

SAT / UNSAT

---

* 7. **Reset the Manual Trip Handle.**

STANDARD: Contacts the Non-Licensed Operator to direct him to reset the Manual Trip Handle.

COMMENTS:
1. **Simulator Driver will toggle RF TC05 to RESET in order to reset the Manual Trip Handle.**

   This action does not physically reset the Main Turbine; it only resets the Manual Trip Handle.
2. **Non-Licensed Operator will report that the Manual Trip Handle is reset.**

SAT / UNSAT

---

* 8. **Turn the LOAD LIMIT SET potentiometer fully counter clockwise then position it to 10.**

STANDARD: Turns the LOAD LIMIT SET potentiometer fully counter clockwise and then positions it to 10.

COMMENTS: Turning the LOAD LIMIT SET potentiometer fully counter clockwise before positioning it to 10 ensures that any remaining Load Limit Setbacks are reset.

SAT / UNSAT

_____ 9. Adjust the MAIN TURBINE LUBE OIL TEMP CONTROL, 1P41-R032, to 115 degrees F.

STANDARD: Confirms the MAIN TURBINE LUBE OIL TEMP CONTROL, 1P41-R032, is set to 115 degrees F.

COMMENTS: The MAIN TURBINE LUBE OIL TEMP CONTROL, 1P41-R032, is currently set to 115 degrees F.

SAT / UNSAT

---

* _____ 10. **Press and hold the TURBINE-RESET button until the RESET MECHANICAL and RESET ELECTRICAL lights are on, then release.**

STANDARD: Press and hold the black TURBINE-RESET button and verify the Green lights ON for the RESET MECHANICAL and RESET ELECTRICAL lights, then release the TURBINE-RESET button.

COMMENTS:

1. The RESET ELECTRICAL light will cycle several times before it finally remains on, then the candidate will release the TURBINE-RESET button.
2. **If the candidate releases the TURBINE-RESET button prematurely, then this is not a step failure.**

   As the Unit Supervisor, direct the candidate to re-perform the step and continue to press and hold the TURBINE-RESET button until the RESET MECHANICAL and RESET ELECTRICAL lights remain on.
3. The candidate may observe, using the valve position meters that the TSVs, TCVs, and IVs are in the CLOSE position and the ISVs are in the OPEN position.
4. The candidate may announce that alarm RPS TURB CONT V FAST CLOSE (H13-P680-5 (A5)) cleared (expected).
5. The candidate may observe the STARTING RATE-SLOW White light come on.

SAT / UNSAT

_____ 11. Verify the following:

a. Main Stop Valves are closed.
b. Turbine Control Valves are closed.
c. Intercept Valves are closed.
d. Intermediate Stop Valves are open.
e. Exhaust Hood Sprays are available.

STANDARD:

a. The Main Stop Valves are verified closed by observing position indication (0%) on meters N32-R704A-D.

b. The Turbine Control Valves are verified closed by observing position indication (0%) on meters N32-R706A-D.

c. The Intercept Valves are verified closed by observing position indication (0%) on meters N32-R709A-F.

d. The Intermediate Stop Valves are verified open by observing position indication (100%) on meters N32-R708A-F.

e. Directs the Non-Licensed Operator to verify that Exhaust Hood Sprays are available or asks the Unit Supervisor if Exhaust Hood Sprays are available.

COMMENTS: **As the Non-Licensed Operator or the Unit Supervisor, cue the candidate that Exhaust Hood Sprays are available.**

SAT / UNSAT

_____ 12. Reset the Standby System by pressing the STANDBY SIGNAL MATCH-RESET button. The STANDBY TRIPPED light should go off.

STANDARD: Resets the Standby System by pressing the STANDBY SIGNAL MATCH-RESET button. Verifies the Red light OFF for the STANDBY TRIPPED light.

COMMENTS: The Standby System is already in the RESET condition with the Red STANDBY TRIPPED light OFF.

SAT / UNSAT

_____ 13. Reset the First Hit Detector on EHC Cabinet, 1H13-P821, by pressing both FIRST HIT RESET buttons simultaneously and observing all tripped conditions go off.

STANDARD: Resets the First Hit Detector on EHC Cabinet, 1H13-P821, by pressing both FIRST HIT RESET buttons simultaneously and observing all tripped conditions go off.

COMMENTS:

1. **Panel 1H13-P821 does not exist in the simulator. Candidate is expected to simulate his presence at this panel by going to the Simulator Instructor Station and requesting that the First Hit Detector be reset.**

   A Remote Function does not exist to reset the First Hit Detector.

2. **Simulator Driver will cue the candidate that the First Hit Detector on EHC Cabinet, 1H13-P821, has been reset and all tripped conditions are off.**

SAT / UNSAT

_____ 14. On the Turbine Supervisory Recorder Panel, 1H13-P823, place the TURBINE BEARING VIBRATION recorder, 1N31-R002, to FAST.

STANDARD: The TURBINE BEARING VIBRATION recorder, 1N31-R002, is placed in FAST at Turbine Supervisory Recorder Panel, 1H13-P823.

COMMENTS:

SAT / UNSAT

_____ 15. Observe the following vibration limitations for all journal bearings during rolling:

Speed	Acceptable ___ mils	Trip IMMEDIATELY if mils is exceeded	Trip if ___ mils is exceeded for ___ mins.	
LESS THAN 800 RPM	NA	8	NA	
800-1400 RPM	7	12	10	2 mins
1400-1800 RPM	5	12	10	15 mins

STANDARD: Observes the vibration limitations for all journal bearing during rolling.

COMMENTS:
1. This step is more like a Note or Caution statement because there is no action to perform.
2. **The vibration limits in this step will become critical when the actual turbine roll commences.**

SAT / UNSAT

* 16. **Establish the starting rate as follows:**

a. Shell temperature greater than 350 degrees F; press the STARTING RATE-FAST button.
b. Shell temperature between 250 degrees F and 350 degrees F, press the STARTING RATE-MEDIUM button.
c. Observe the selected light comes on.

STANDARD: STARTING RATE-MEDIUM button is selected with White light ON based on shell temperature.

COMMENTS:
1. The candidate may observe shell temperature on Main Turbine Temperature & Expansion Recorder, 1N31-R001, Point 4, at back panel 1H13-P823, or on ICS BOP Screen 'Main Turbine'.
2. NOTE: The starting rate default is SLOW.
3. The candidate determines that shell temperature is ~ 307 degrees F, the correct starting rate is MEDIUM.

SAT / UNSAT

---

17. During turbine acceleration, locally monitor the turbine for adequate oil flow from the journal bearings, unusual noises and rubbing.

STANDARD: Contacts the Non-Licensed Operator to locally monitor the turbine for adequate oil flow from the journal bearings, unusual noises and rubbing during turbine acceleration.

COMMENTS: **Simulator Driver – insert malfunction TC04C at 100% (bearing #3 metal failure) and verify that Remote Function TC06 is in BYPASS (high vibration trip).**

SAT / UNSAT

---

* 18. **Determine the initial speed as follows:**

a. If turbine speed is less than 100 rpm, press the SPEED SET RPM – 100 button. Continue to Step 19.

b. If turbine speed is less than 1500 rpm:

1). Read the following temperatures from Generator Temp Recorder, 1N41-R110, on Electrical Recorder Panel, 1H13-P811:

Point 8 – HOT AIR TO ALT CLR No. 1
Point 9 – HOT AIR TO ALT CLR No. 2
Point 18 – HOT AIR FROM COLLECTOR

2). If Point 18 and the average of Points 8 and 9 are greater than 68 degrees F and MAIN LUBE OIL TEMP (FM COOLER), is greater than 100 degrees F, press the SPEED SET RPM – 1800 button.

3). If the limits in 2) are not met, press the SPEED SET RPM – 1500 button.

c. If turbine speed is greater than 1500 rpm, press the SPEED SET RPM – 1800 button.

STANDARD: Proper SPEED SET RPM is selected with White light ON based on actual turbine speed and generator temperature.

COMMENTS:
1. The candidate may observe turbine rpm on meter 1N32-R713 or on ICS BOP Screen 'Main Turbine', or ICS BOP Screen 'Main Turbine Bearings'.
2. Points 8 and 9 will read ~71 degrees F, Point 18 will read ~ 72 degrees F, and MAIN LUBE OIL TEMP (FM COOLER) is > 100 degrees F; therefore, the candidate should select 1800 RPM based on meeting the temperature criteria above.

SAT / UNSAT

_____ 19. Observe the following:

a. SPEED SET RPM – CLOSED VALVES light goes off.
b. SPEED SET RPM – 100 (1500) (1800) light comes on for the selected speed.
c. SPEED MONITORING – SPEED INCREASING light comes on.
d. MAIN STOP VALVES open.
e. COMBINED INTERMEDIATE VALVES open.
f. TURBINE CONTROL VALVES No. 1 thru No. 4 open.

STANDARD:

a. SPEED SET RPM – CLOSED VALVES Green light OFF.

b. SPEED SET RPM – 100 (1500) (1800) White light ON for the selected speed.

c. SPEED MONITORING – SPEED INCREASING White light On.

d. Main STOP VALVES are verified open by observing position indication (100%) on meters N32-R704A-D.

e. COMBINED INTERMEDIATE VALVES are verified open by observing position indication (100%) on meters N32-R708A-F and N32-R709A-F.

f. TURBINE CONTROL VALVES are verified open by observing position indication on meters N32-R706A-D.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

COMMENTS:

1. **As turbine speed increases, bearing #3 metal temperature and vibration will begin to increase. All other bearings will indicate normal temperature and vibration.**

2. **It is expected that the following alarms will occur prior to completing the evolution:**

   - **MN TURB BRG METAL TEMP P823 (H13-P680-7-B9)**
   - **TURB/GEN/EXCTR VIB P823 (H13-P680-7-B13)**

   Proceed to Steps 28 and 29 to evaluate the candidate's response to these alarms.

   Candidate may also decide to trip the Main Turbine before the vibration limits specified in Step 15 are exceeded based on operator judgement.

3. The candidate may announce that alarm RPS TURB STOP VLV CLOSURE (H13-P680-5 (A4)) cleared (expected).

4. The opening of Turbine Control Valves No. 1 – No.4 may not be perceptible on meters N32-R706A-D. The candidate may observe Turbine Control Valve position using ICS BOP Screen 'Main Turbine'.

SAT / UNSAT

_____ 20. Monitor turbine bearing temperatures on TURBINE BEARING METAL TEMPERATURE, N31-R005, on 1H13-P823.

STANDARD: Monitors turbine bearing temperatures on TURBINE BEARING METAL TEMPERATURE, N31-R005, on 1H13-P823.

Reports that Bearing #3 metal temperature is increasing.

COMMENTS:

1. An increase in Bearing #3 vibration and oil temperature from bearing outlet can also be noted on ICS BOP Screen 'Main Turbine Bearings'.

2. **From this step on, candidate should be making periodic reports to the Unit Supervisor and asking for direction on whether to continue the turbine roll.**

   It is recommended that the Examiner wait until at least the MN TURB BRG METAL TEMP P823 alarm annunciates before contemplating any orders to trip the Main Turbine.

3. **When MN TURB BRG METAL TEMP P823 alarm annunciates, proceed to Step 28.**

   Steps 21-27 can be marked as N/A if a particular step was not performed.

4. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

_____ 21. On Process Computer MAIN CONDENSER/TURBINE EXHAUST Screen, confirm EXH HOOD TEMPS are less than 175 degrees F.

STANDARD: Confirm EXH HOOD TEMPS are less than 175 degrees F. on Process Computer MAIN CONDENSER/TURBINE EXHAUST Screen.

COMMENTS:
1. Exhaust Hood temperatures will show no significant increase.
2. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

---

* _____ 22. **With turbine speed greater than 100 RPM, reset the AUXILIARY SPEED SIGNAL on P821 by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously.**

STANDARD: Resets the AUXILIARY SPEED SIGNAL on EHC Cabinet, 1H13-P821, by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously.

COMMENTS:
1. **Panel 1H13-P821 does not exist in the simulator. Candidate is expected to simulate his presence at this panel by going to the Simulator Instructor Station and requesting that the AUXILIARY SPEED SIGNAL be reset by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously.**
1. **Simulator Driver will toggle RF TC07 to RESET in order to reset the AUXILIARY SPEED SIGNAL.**
3. **Simulator Driver will cue the candidate that the AUXILIARY SPEED SIGNAL on EHC Cabinet, 1H13-P821, has been reset.**
4. The candidate may observe that the Red ELECTRICAL MALFUNCTION light is OFF on panel 1H13-P680.
5. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

---

* 23. **When turbine RPM is at the selected speed, the SPEED MONITORING – AT SET SPEED light should come on and the SPEED INCREASING light should go off.**

a. If operating at 1500 RPM, select 1800 RPM.

1). Average HOT TO COOLER No. 1 and No. 2 temperature is greater than 68 degrees F, and

2). HOT AIR FROM COLLECTOR temperature is greater than 68 degrees , and

3). MAIN TURBINE LUBE OIL TEMP (LUBE OIL FM COOLER) temperature is greater than 100 degrees F.

b. If operating at 100 RPM, return to Step 18.b.

STANDARD: When the turbine is at the previously selected speed, the next proper SPEED SET RPM is selected with White light ON based on actual turbine speed and generator temperature.

COMMENTS:

1. The candidate observes Red light ON for the SPEED MONITORING – AT SET SPEED and White light OFF for the SPEED INCREASING.

2. The candidate may observe turbine rpm on meter 1N32-R713 or on ICS BOP Screen 'Main Turbine', or ICS BOP Screen 'Main Turbine Bearings'.

3. Points 8 and 9 will read ~ 70 degrees F and Point 18 will read ~ 70 degrees F, therefore, the candidate should select 1800 RPM, if not previously selected.

4. **There is a typo in Step 22.a.2) of the SOI – the step should read HOT AIR FROM COLLECTOR vice HOT AIR ALTERNATOR COOLER. (Ref: see Step 25 in Section 4.4)**

5. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

* 24. **At 1800 RPM, reset the EHC Power Monitor by pressing the PMG-RESET button on P821. Confirm that the PMG IN CONTROL light is on.**

STANDARD: At 1800 RPM, resets the EHC Power Monitor by pressing the PMG RESET button on panel 1H13-P821. Confirms that the PMG IN CONTROL light is on.

COMMENTS:

1. **Panel 1H13-P821 does not exist in the simulator. Candidate is expected to simulate his presence at this panel by going to the Simulator Instructor Station and requesting that the EHC POWER MONITOR be reset by pressing the PMG RESET button.**

   A Remote Function does not exist to reset the EHC Power Monitor.

2. **Simulator Driver will cue the candidate that the EHC Power Monitor on EHC Cabinet, 1H13-P821, has been reset and the PMG IN CONTROL light is on.**

3. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

* 25. **Reset the POWER SYSTEM MALFUNCTION and SYSTEM FAULT lights by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously on P821.**

STANDARD: At 1800 RPM, resets the POWER SYSTEM MALFUNCTION and SYSTEM FAULT lights on EHC Cabinet, 1H13-P821, by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously.

COMMENTS:

1. **Panel 1H13-P821 does not exist in the simulator. Candidate is expected to simulate his presence at this panel by going to the Simulator Instructor Station and requesting that the POWER SYSTEM MALFUNCTION and SYSTEM FAULT lights be reset by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously.**

2. **Simulator Driver will toggle RF TC07 to RESET in order to reset the POWER SYSTEM MALFUNCTION and SYSTEM FAULT lights.**

3. **Simulator Driver will cue the candidate that the POWER SYSTEM MALFUNCTION and SYSTEM FAULT lights have been reset and all trip and malfunction status lights on panel 1H13-P821 are off.**

4. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

5. The candidate may observe that the Red SYSTEM FAULT light is off on panel H13-P680.

SAT / UNSAT

_____ 26. Shift the TURBINE BEARING VIBRATION recorder, N31-R002, on P823 to SLOW.

STANDARD: The TURBINE BEARING VIBRATION recorder, N31-R002, on P823 is shifted to SLOW.

COMMENTS: **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

_____ 27. Perform Resetting the Generator Gas Monitoring System section per this SOI.

STANDARD: The Generator Gas Monitoring System is reset.

COMMENTS:

1. Candidates references Section 7.12 of SOI-N32/39/41/51.
2. Resetting the Generator Gas Monitoring System cannot be performed in the simulator.
3. **Panel 1H13-P864 does not exist in the simulator. Candidate is expected to simulate his presence at this panel by going to the Simulator Instructor Station and requesting that the Generator Gas Monitoring System be reset.**
4. **Simulator Driver will override alarm H13-P680-9 (E3) to OFF to reset the Generator Gas Monitoring System.**
5. **Simulator Driver will cue the candidate that the Generator Gas Monitoring System has been reset.**
6. The candidate may announce that the GENERATOR CORE MON alarm is clear on panel 1H13-P680.
7. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**

SAT / UNSAT

---

* 28. **Annunciator H13-P680-7 (B9), MN TURB BRG METAL TEMP P823 alarm is received.**

STANDARD: Consults ARI H13-P680-7 (B9), MN TURB BRG METAL TEMP P823, for expected operator actions to perform.

COMMENTS:

1. There are no Immediate Operator Actions to be performed.
2. **If requested, the Non-Licensed Operator can report that oil flow from the #3 journal bearing is decreasing but has not stopped (reason unknown).**
3. **The candidate may observe #3 journal bearing temperature is greater than 225 degrees F on TURBINE BEARING METAL TEMPERATURE recorder N31-R005, at panel H13-P823.**
4. **The candidate may decide to trip the Main Turbine before the vibration limits specified in Step 15 are exceeded.**

   As the Unit Supervisor, cue the candidate to perform the Immediate Actions of ONI-N32, Turbine and/or Generator Trip.

   Go to Step 30.

SAT / UNSAT

* 29. **Annunciator H13-P680-7 (B13), TURB/GEN/EXCTR VIB P823 alarm is received.**

STANDARD: Consults ARI H13-P680-7 (B13), TURB/GEN/EXCTR VIB P823, for expected operator actions to perform.

Concludes that the Main Turbine should have tripped but did not.

Immediately informs Unit Supervisor of the abnormal condition

COMMENTS:

1. **The candidate should trip the Main Turbine without direction from the Unit Supervisor.**

2. **If the candidate does not trip the Main Turbine in a timely manner, then the Unit Supervisor should direct the candidate to trip the Main Turbine and perform the Immediate Actions of ONI-N32, Turbine and/or Generator Trip.**

   Go to Step 30.

SAT / UNSAT

* 30. **Trip the main turbine by depressing the TURBINE TRIP pushbutton and verify the following:**

a. **MAIN STOP VALVES, CONTROL VALVES, and COMBINED INTERMEDIATE VALVEs shut.**
b. **GEN BRKRs S-610-PY-TIE and S-611-PY-TIE trip.**
c. **GEN FIELD BREAKER trips.**

STANDARD: Press the Red TURBINE-TRIP button and verify:

a. MAIN STOP VALVES, CONTROL VALVES, and COMBINED INTERMEDIATE VALVEs shut.
b. GEN BRKRs S-610-PY-TIE and S-611-PY-TIE trip.
c. GEN FIELD BREAKER trips.

COMMENTS:

1. Candidate enters ONI-N32, Turbine and/or Generator Trip.
2. The candidate observes, using the valve position meters that the TSVs, TCVs, IVs, and ISVs are in the CLOSE position.
3. The candidate may observe the Red lights ON for the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights.
4. **GEN BRKRs S-610-PY-TIE and S-611-PY-TIE were not required to trip because they were already open.**
5. **GEN FIELD BREAKER was not required to trip because it was already open.**
6. The candidate may announce that alarm RPS TURB STOP VLV CLOSURE (H13-P680-5 (A4)) annunciated (expected).
7. The candidate may announce that alarm RPS TURB CONT V FAST CLOSE (H13-P680-5 (A5)) annunciated (expected).

SAT / UNSAT

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

_____ 31. When the turbine is tripped, confirm the station loads are supplied by the Startup Transformer.

STANDARD: Confirms the station loads are supplied by the Startup Transformer.

COMMENTS:
1. Station loads did not transfer because they were already on the Startup Transformer.
2. The candidate reports that the Immediate Actions of ONI-N32 are completed.
3. **As the Unit Supervisor, inform the candidate that another operator will be assigned to monitor the turbine shutdown.**

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: The Main Turbine is manually tripped due to the failure of bearing #3 during a quick restart of the Main Turbine.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.d

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.d

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE B.1.d
Attachment #1

Initial Conditions:	Plant startup is in progress. PTI-N32-P0003, Main Turbine Overspeed Test was successfully completed 15 minutes ago. All actions for ONI-N32, Turbine and/or Generator Trip have been completed. ONI-N32 has been exited. The Main Turbine is coasting down. Plant Management has given permission to restart the Main Turbine.
Initiating Cue:	The Unit Supervisor directs you to roll the Main Turbine to 1800 rpm in accordance with SOI-N32/39/41/51, Section 4.6, Turbine Roll Following Turbine Trip (Quick Restart). A Non-Licensed Operator is on station at the Turbine Front Standard to assist with the turbine roll.

Perry JPM B.1.d

Turbine Roll Following Turbine Trip Quick Restart (Faulted)

Reference Materials

GENERAL INSTRUCTIONS AND GOOD OPERATING PRACTICES

B. Good Operating Practices

During the conduct of the day-to-day operating routine, there are certain operating practices which are recommended. They are as follows:

1. Ensure that Health Physics is notified of changes in Operation Conditions, major system start-ups or realignments (e.g., RCIC, RHR, RWCU, etc.), or changes in plant conditions which may significantly change radiological conditions.

2. Operators shall consider installed instrumentation to be correct unless proven faulty by direct comparison with other independent instruments, or by instrument functional testing or calibration. <F00442>

   Operators must also make a determination of instrument adequacy based on the current system configuration. Many temperature instruments require that there be system flow across the temperature detector in order to ensure that a representative measurement of the desired fluid temperature is being obtained. (Ex.: Attempting to read RHR system temperature with the HX Inlet valve closed and the HX Bypass valve open.)

2a. Do not rely solely upon annunciator alarms to monitor or control processes when a direct indicator exists that provides real time monitoring of the same parameter. For example, a low level alarm should not be utilized when a level gauge is available to monitor the level.

3. Do not rely on interlocks during manual operation of systems or components.

4. Verify all automatic actions occurring as a result of plant transients.

5. Whenever possible, place systems having an automatic actuation feature(s) in a lineup that prevents an automatic actuation prior to performing system trouble-shooting or repair. <L00661>

6. Equipment that has been identified as being defective or having failed should be tagged so as to limit the possibilities of personnel injury or additional equipment failures. The level and scope of tagging utilized is at the discretion of the Unit Supervisor and should be evaluated on a case by case basis.

7. Do not leave disconnect switches or breakers open without placing DANGER or OPS ADMIN tags as appropriate. This requirement only applies to breakers and disconnect switches which are normally closed or have not been opened as the result of SOI or ELI performance.

4.6 Turbine Roll Following Turbine Trip (Quick Start)

1. Verify the following initial conditions:

   a. The cause of the Turbine Trip has been determined and positively corrected.
   b. Less than three hours have elapsed since the turbine trip and the turbine never went on the jack or stopped.
   c. Turbine bearing oil temperature is greater than 90°F as read on MAIN TURBINE LUBE OIL TEMP, 1N34-R135 (LUBE OIL FM COOLER).
   d. Plant Management permission has been obtained to restart the Main Turbine.
   e. Jack CLOSED light is on.
   f. Motor Suction Oil Pump is operating and Main Shaft Suction Pressure is at least 25 psig as read at front standard on Shaft Driven Pmp Press Indicator, 1N34-R182.
   g. Turbine bearing oil pressure is greater than 15 psig as read on TURBINE OIL PRESSURE BRG HD, 1N34-R121.
   h. Local indication of oil flow at each journal bearing drain line.

2. Station an operator at the Turbine Front Standard in communication with the control room operator.

3. Press the TURBINE-TRIP button and verify the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights are on.

4. Press and hold the TURBINE-RESET button until the RESET MECHANICAL and RESET ELECTRICAL lights are on, then release.

5. Trip the Turbine Emergency Trip System (ETS) using the Manual Trip Handle (MTH) at the Turbine Front Standard.

6. Verify the MECHANICAL TRIPPED and ELECTRICAL TRIPPED lights are on.

7. Reset the Manual Trip Handle.

8. Turn the LOAD LIMIT SET potentiometer fully counter clockwise then position it to 10.

   NOTE: Turning the LOAD LIMIT SET potentiometer fully counter clockwise before positioning it to 10 ensures that any remaining Load Limit Setbacks are reset.

9. Adjust the MAIN TURBINE LUBE OIL TEMP CONTROL, 1P41-R032, to 115°F.

10. Press and hold the TURBINE-RESET button until the RESET MECHANICAL and RESET ELECTRICAL lights are on, then release.

11. Verify the following:

    a. Main Stop Valves are closed.
    b. Turbine Control Valves are closed.
    c. Intercept Valves are closed.
    d. Intermediate Stop Valves are open.
    e. Exhaust Hood Sprays are available.

12. Reset the Standby System by pressing the STANDBY SIGNAL MATCH - RESET button. The STANDBY TRIPPED light should go off.

13. Reset the First Hit detector on EHC Cabinet, 1H13-P821, by pressing both FIRST HIT RESET buttons simultaneously and observing all tripped conditions go off.

14. On the Turbine Supervisory Recorder Panel, 1H13-P823, place the TURBINE BEARING VIBRATION recorder, 1N31-R002, to FAST.

15. Observe the following vibration limitations for all journal bearings during rolling:

Speed	Acceptable ___ mils	Trip IMMEDIATELY if___mils is exceeded	Trip if___mils is exceeded for ____ mins.
LESS THAN 800 RPM	NA	8	NA
800-1400 RPM	7	12	10 2 mins.
1400-1800 RPM	5	12	10 15 mins.

16. Establish the starting rate as follows:

    a. Shell temperature greater than 350°F, press the STARTING RATE - FAST button.
    b. Shell temperature between 250°F and 350°F, press the STARTING RATE - MEDIUM button.
    c. Observe the selected light comes on.

    NOTE: The starting rate default is SLOW.

17. During turbine acceleration, locally monitor the turbine for adequate oil flow from the journal bearings, unusual noises and rubbing.

18. Determine the initial speed set as follows:

    a. If turbine speed is less than 100 RPM, press the SPEED SET RPM - 100 button. Continue to Step 19.
    b. If turbine speed is less than 1500 RPM:

        1) Read the following temperatures from Generator Temp Recorder, 1N41-R110, on Electrical Recorder Panel, 1H13-P811:

            Point 8 - HOT AIR TO ALT CLR No. 1
            Point 9 - HOT AIR TO ALT CLR No. 2
            Point 18 - HOT AIR FROM COLLECTOR

        2) If Point 18 and the average of Points 8 and 9 are greater than 68°F and MAIN LUBE OIL TEMP (FM COOLER), is greater than 100°F, press the SPEED SET RPM - 1800 button.

        3) If the limits in 2) are not met, press the SPEED SET RPM - 1500 button.

    c. If turbine speed is greater than 1500 RPM, press the SPEED SET RPM - 1800 button.

19. Observe the following:

    a. SPEED SET RPM - CLOSED VALVES light goes off.
    b. SPEED SET RPM - 100 (1500) (1800) light comes on for the selected speed.
    c. SPEED MONITORING - SPEED INCREASING light comes on.
    d. MAIN STOP VALVES open.
    e. COMBINED INTERMEDIATE VALVES open.
    f. TURBINE CONTROL VALVES No. 1 thru No. 4 open.

20. Monitor turbine bearing temperatures on TURBINE BEARING METAL TEMPERATURE, 1N31-R005, on 1H13-P823.

20a. On Process Computer MAIN CONDENSER/TURBINE EXHAUST Screen, confirm EXH HOOD TEMPs are less than 175°F.

    NOTE: The following process computer points are associated with this screen: LP EXHAUST HOOD A (B,C) TEMPERATURE, N31BA026 (N31BA027, N31BA028).

21. With turbine speed greater than 100 RPM, reset the AUXILIARY SPEED SIGNAL on P821 by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously.

22. When turbine RPM is at the selected speed, the SPEED MONITORING - AT SET SPEED light should come on and the SPEED INCREASING light should go off.

    a. If operating at 1500 RPM, select 1800 RPM when:

        1) Average HOT TO COOLER No. 1 and No. 2 temperature is greater than 68°F, and

2) HOT AIR ALTERNATOR COOLER temperature is greater than 68°F, and

3) MAIN TURBINE LUBE OIL TEMP (LUBE OIL FM COOLER) temperature is greater than 100°F.

b. If operating at 100 RPM, return to Step 18.b.

23. At 1800 RPM, reset the EHC Power Monitor by pressing the PMG-RESET button on P821. Confirm that the PMG IN CONTROL light is on. <B00407>

24. Reset the POWER SYSTEM MALFUNCTION and SYSTEM FAULT lights by pressing both ELECTRICAL MALFUNCTION RESET buttons simultaneously on P821.

NOTE: All trip and malfunction status lights should be off.

25. Shift the TURBINE BEARING VIBRATION recorder, 1N31-R002, on P823 to SLOW.

NOTE: Any turbine testing to be conducted with the generator separated from the grid should be performed at this point.

26. Perform Resetting the Generator Gas Monitoring System section per this SOI.

27. Load the Main Turbine Generator per the appropriate Integrated Operating Instruction.

5.0 SYSTEM OPERATIONS

5.1 EHC Fluid Subsystem Operations

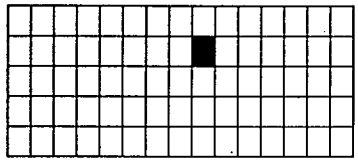
Process Variable	Normal Operating Value	Indicator(s)	Panel/Insert
EHC HYD FLUID PRESS	1600 psig	1N32-R046	P870 Section 9
EHC RESERVOIR LEVEL	0 ± 2 inches	1N32-N010	EHC SKID
0.5 MICRON FILTER INLET PRESSURE	less than 15 psig	1N32-R175	EHC SKID
EHC HYD PUMP DISCHARGE PRESS	1600 psig	1N32-R155A, B	EHC SKID

1. Fuller's Earth Filter differential pressure should be less than 25 psid (difference between Earth Filter Inlet Pressure, 1N32-R170, and 0.5 Micron Filter Inlet Pressure, 1N32-P175).

Computer Point ID
None

SER Address
None

MN TURB BRG
METAL TEMP
P823



B9

1.0 CAUSE OF ALARM

1. Any of journal bearings 1-12 >225°F or thrust bearing temperature >180°F as actuated by TURBINE BEARING METAL TEMPERATURE recorder, 1N31-R005, on Turbine Supervisory Recorder Panel, 1H13-P823.
2. High bearing temperature could be caused by:
   a. Failure of MAIN TURBINE LUBE OIL TEMP CONTROL, 1P41-R032
   b. Loss of cooling water to the Main Lube Oil Cooler
   c. Main Lube Oil Cooler air bound
   d. Improper oil flow to the bearing(s)

2.0 AUTOMATIC ACTION

None

3.0 IMMEDIATE OPERATOR ACTION

None

4.0 SUBSEQUENT OPERATOR ACTION

****

CAUTION

Main Turbine should not be operated with journal bearing metal temperature >250°F or thrust bearing metal temperature >190°F.

****

1. If necessary, reduce turbine load to lower bearing(s) temperature.
2. Monitor recorder 1N31-R005 on P823 to determine which bearing(s) have a high temperature condition. Confirm lube oil temperature approximately 110-120°F on MAIN TURBINE LUBE OIL TEMP, 1N34-R135.
3. Verify proper operation of MAIN LUBE OIL TEMP CONTROL, 1P41-R032, taking manual control if necessary.
4. Check for proper bearing lube oil flows locally.
5. If necessary, vent the operational Main Lube Oil Cooler. If necessary, shift Main Lube Oil Coolers per SOI-N34.
6. If bearing temperature(s) cannot be reduced, consideration should be given to shutting down the Main Turbine.

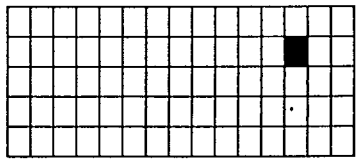
4.1 Technical Specification

None

Computer Point ID
None

SER Address
None

TURB/GEN/
EXCTR VIB
P823



B13

1.0 CAUSE OF ALARM

1. Main Turbine, Generator or Exciter bearing vibration >12 mils as sensed by 1N31-N001 through 1N31-N012.

2.0 AUTOMATIC ACTION

1. The Main Turbine Generator trips.

3.0 IMMEDIATE OPERATOR ACTION

1. Enter ONI-N32, Turbine and/or Generator Trip.

4.0 SUBSEQUENT OPERATOR ACTION

1. Contact maintenance to initiate corrective action.

2. Consult EPI-A1, Emergency Action Levels, for Emergency Plan Classification and actions to be taken.

4.1 Technical Specification

None

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Off-Normal Instruction

TITLE: TURBINE AND/OR GENERATOR TRIP

REVISION: 4 EFFECTIVE DATE: 7-8-89

TC REVISION

Preparer of Previous Revision Joseph D. Pierson

EFFECTIVE PIC's

PIC No.	Type of Change	Effective Date
1	Conditional	8-1-94
2	Non-Intent	4-21-95
3	Non-Intent	10-23-95
4	Conditional	9-22-95
5	Non-Intent	6-4-96
6	Non-Intent	5-28-97
7	Non-Intent	2-17-00
8	Non-Intent	6-6-00

Turbine and/or Generator Trip

1.0 INDICATIONS

1.1 Annunciator Alarms

1. GENERATOR LOCKOUT RELAY TRIP
2. MAIN TURBINE TRIP
3. RPS TURB STOP VLV CLOSURE
4. RPS TURB CONT V FAST CLOSE

1.2 Changes in Plant Operating Parameters

1. MAIN GEN MVARS & MWATTS decrease to zero.

1.3 Other Symptoms

1. Reduction in main turbine SPEED.
2. GENERATOR AMPS indicate zero.
3. GENERATOR VOLTS indicate zero.
4. GENERATOR FIELD VOLTS decrease to zero.
5. GENERATOR FIELD AMPS decrease to zero.
6. Status lights for MECHANICAL and ELECTRICAL TRIP VALVES indicate TRIPPED.

2.0 AUTOMATIC ACTIONS

1. The MAIN STOP VALVEs, CONTROL VALVEs, and COMBINED INTERMEDIATE VALVEs close.
2. GEN BRKRs, S-610-PY-TIE and S-611-PY-TIE, trip.
3. Station loads shift from the Auxiliary Transformer to the Startup Transformer.
4. GEN FIELD BREAKER trips.
5. A reactor scram occurs if reactor power is ≥40% {≥38%} as sensed by turbine first stage pressure.

6. The Reactor Recirculation Pumps downshift to slow speed if reactor power was ≥40% {≥38%} as sensed by turbine first stage pressure.

7. BYPASS VALVES open as necessary to maintain reactor pressure at the PRESS ST PT.

8. The MOTOR SUCTION PUMP, TURNING GEAR OIL PUMP, and BRG 2, 3, 4, 5, 6, 7, 8, 9, & 10 LIFT PMPs auto-start on a decreasing oil pressure from the Main Shaft Oil Pump.

9. Condensate Booster Pumps A, B, & C trip.

10. EXST TO ST SEALS EVAP SUPPLY VLV, 1N33-F040, closes.

11. The following positive air assisted check valves close:

    a. EXST TO HEATER 6A(B) NON-RETURN CHK V, 1N36-F140A(B).
    b. EXST TO HEATER 5A(B) NON-RETURN CHK V, 1N36-F455A(B).
    c. EXST TO HEATER 4 NON-RETURN CHK V, 1N36-F250A(B).
    d. EXST TO HEATER 3A(B) NON-RETURN CHECK V, 1N36-F390A(B).
    e. EXST TO HEATER 3 NON-RETURN CHECK V, 1N36-F460.
    f. EXST TO 1ST STAGE NON-RETURN CHK V, 1N36-F465.
    g. EXST TO ST SEALS NON-RTN CHK V's, 1N33-F150 and 1N33-F035.

12. Drain valves for moisture separator shells, crossaround piping, extraction steam supply, and main steam lines listed in Attachment 3 automatically open on a main turbine trip.

3.0 IMMEDIATE ACTIONS

1. Trip the main turbine by depressing the TURBINE TRIP pushbutton and verify the following:

    a. MAIN STOP VALVEs, CONTROL VALVEs, and COMBINED INTERMEDIATE VALVEs shut.
    b. GEN BRKRs S-610-PY-TIE and S-611-PY-TIE trip.
    c. GEN FIELD BREAKER trips.

2. When the turbine is tripped, confirm station loads are supplied by the Startup Transformer. If station loads failed to shift as required, open NORMAL SUPPLY BRKRS, L1102 and L1202, and enter ONI-R22-2, Loss of a Non-essential 13.8KV or 4.16KV Bus, concurrently with this instruction.

    NOTE: During the automatic transfer of busses L11 and L12 to L10, Service Air Compressor, 1P51-C001, Instrument Air Compressor, 1P52-C001, Turbine Building Chiller, 1P46-C001A(B), and Containment Vessel Chiller, P50-C001A(B), may trip due to loss of power to their electronic controls. Also, the process computer may be affected.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.e

Facility: PERRY Task No: 315-501-01-01

JPM No: B.1.e

Task Title: **Startup to Intermittent Mode**

K/A Reference: 288000 A4.01 (3.1 / 2.9)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.e

Task Standard:	**Containment Vessel and Drywell Purge (CVDWP) Train 'A' is operating in the Intermittent Mode in accordance with SOI-M14.**
Required Materials:	None
General References:	SOI-M14, Containment Vessel and Drywell Purge System (CVDWP) Revision 11, PIC 7
Initial Conditions:	**Plant startup is in progress. Primary Containment integrity is set. The drywell purge supply ducting is filled. Health Physics has requested the startup of the M14 System for 'air quality considerations for personnel entry'. The expected duration of M14 operation will be 2 hours.**
Initiating Cue:	**The Unit Supervisor directs you to startup M14 Train 'A' in the Intermittent mode in accordance with SOI-M14.**
Time Critical Task:	YES/NO X
Validation Time:	15 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.e

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. If outside air temperature is ≤ -20 °F, do not perform this section.

STANDARD: Verifies outside ambient air temperature is > -20 °F and proceeds with task.

COMMENTS:

1. Candidate references SOI-M14, Section 4.1.
2. **NOTE: During MODES 1, 2, or 3, M14 system operation should be restricted, when possible, to between 1100 and 1600 hours. This will result in lower off-site noble gas doses due to favorable meteorological conditions.**

   If candidate questions the Unit Supervisor about this Note, then inform the candidate to continue with the task.
3. Candidate should reference either the ICS BOP 'Meteorological Data' or ICS Group Point Display '@METDAT' screens to obtain current outside air temperature.
4. Simulator Driver will role-play as the Non-Licensed Operator, Chemistry Unit, and Health Physics Unit for the entire evolution.

AT / UNSAT START TIME: _____

_____ 2. If P55 is not available and outside ambient air temperature is < 50 °F but ≥ 40 °F then establish monitoring of the following parameters on Attachment 10 (Containment Temperature Data Sheet) at 8 hour intervals:

Outside ambient air temperature	-	≥ 40 °F
Containment average temperature	-	≥ 60 °F
Suppression pool temperature	-	≥ 60 °F
Annulus temperature	-	≥ 60 °F

STANDARD: Confirms outside ambient air temperature is > 50 °F, therefore, monitoring is not required.

COMMENTS:

SAT / UNSAT

_____ 3. If in MODES 1, 2, or 3, verify the drywell purge supply ducting is filled.

STANDARD: Confirms the drywell purge supply ducting is filled.

COMMENTS:
1. The fill of the drywell purge supply ducting was reported as completed in the Initial Condition summary.
2. Filling of the drywell purge supply ducting is a Tech Spec requirement in MODES 1, 2, and 3.

SAT / UNSAT

_____ 4. If either the containment equipment hatch is removed or a containment personnel air lock has been overridden with both doors open, open Breaker #27 in K-1-D, 1R25-S053, to place the supply fans in flow control mode.

STANDARD: Confirms the containment equipment hatch is not removed and the containment personnel air locks have not been overridden with both doors open.

COMMENTS:
1. Primary Containment integrity was reported as set in the Initial Condition summary.

   If candidate questions the Unit Supervisor about this step, then inform the candidate that Primary Containment integrity is set, therefore, the containment equipment hatch is installed and both containment personnel air locks are OPERABLE.

2. Opening Breaker #27 in K-1-D would prevent the supply fans from operating in the d/p mode, which is the preferred mode of operation to keep the Containment vacuum breakers closed in MODES 1, 2, and 3.

SAT / UNSAT

_____ 5. Notify the Chemistry Unit to sample per REC-0104.

STANDARD: Contacts the Chemistry Unit to inform them of impending startup of M14 Train A in the Intermittent mode and the need to sample per REC-0104.

COMMENTS:
1. Sample does <u>not</u> need to be completed before the system startup is performed. However, the sample must be completed before the system can be shutdown.

2. This sample is an ODCM requirement; therefore it is important that the Chemistry Unit be notified.

SAT / UNSAT

_____ 6. Notify the Health Physics Unit of the expected duration of M14 operation.

STANDARD: Contacts the Health Physics Unit to inform them that expected duration of M14 operation will be 2 hours.

COMMENTS: It is a good operating practice to notify the Health Physics Unit whenever any type of Containment evolution is performed which may cause radiological conditions to change.

SAT / UNSAT

_____ * 7. **Verify system fan settings adjusted per Attachment 8, Intermittent and Refuel Mode Fan Settings.**

STANDARD: Contacts Non-Licensed Operator to direct him to verify the system fan settings are adjusted to the proper Intermittent Mode fan settings per Attachment 8, Intermittent and Refuel Mode Fan Settings.

COMMENTS: The Simulator IC already contains the correct Intermittent Mode flow settings. However, if the candidate asks the Non-Licensed Operator for the specific values, then the Simulator Driver must refer to Attachment 8 for the exact values to report.

SAT / UNSAT

---

* 8. **Take the following valve control switches to OPEN:**

a. **CNTMT PURGE EXH BYP SECOND ISOL DMPR, 1M14-F200**
b. **CNTMT PURGE EXH BYP FIRST ISOL DMPR, 1M14-F205**
c. **CNTMT & DW EXH OTBD ISOL DMPR, 1M14-F090**
d. **CNTMT PURGE SUPP BYP FIRST ISOL DMPR, 1M14-F190**
e. **CNTMT PURGE SUPP BYP SECOND ISOL DMPR, 1M14-F195**
f. **CNTMT PURGE SUPP OTBD ISOL DMPR, 1M14-F040**

STANDARD: Red light ON for:

a. CNTMT PURGE EXH BYP SECOND ISOL DMPR, 1M14-F200
b. CNTMT PURGE EXH BYP FIRST ISOL DMPR, 1M14-F205
c. CNTMT & DW EXH OTBD ISOL DMPR, 1M14-F090
d. CNTMT PURGE SUPP BYP FIRST ISOL DMPR, 1M14-F190
e. CNTMT PURGE SUPP BYP SECOND ISOL DMPR, 1M14-F195
f. CNTMT PURGE SUPP OTBD ISOL DMPR, 1M14-F040

COMMENTS: All valves are normally in the CLOSE position when the system is not in operation.

SAT / UNSAT

_____ 9. If outside air temperature is ≤ 35 °F, slowly adjust temperature controller 1M14-R022A, located on H51-P158, to the maximum setpoint (approximately 90 °F).

STANDARD: Confirms outside ambient air temperature is > 35 °F, therefore, adjustment of temperature controller 1M14-R022A is not required.

COMMENTS:
1. Candidate was directed to startup M14 Train A per the Initiating Cue.
2. Temperature Controller 1M14-R022A is normally set to 65 °F.

SAT / UNSAT

_____* 10. **Take one of the following fan control switches to START:**

- **CNTMT & DW PURGE EXH FAN A, 1M14-C003A**
- **CNTMT & DW PURGE EXH FAN B, 1M14-C003B**

STANDARD: Red light ON for CNTMT & DW PURGE EXH FAN A, 1M14-C003A.

COMMENTS:
1. Candidate was directed to startup M14 Train A per the Initiating Cue.
2. **NOTE: Startup of the Purge Exhaust Fan may cause the Containment Vacuum Breaker(s) to lift until the system startup is completed. This is an expected occurrence and need not be reported. The event(s) should be recorded in the Plant Narrative Log.**
3. The following alarm(s) may annunciate, and then clear in approximately 5 minutes, when the M14 system shifts to the d/p mode:
   - CNTMT VAC RLF CHECK VLV 1A NOT CLOSED (H13-P800-2 (A2)).
   - CNTMT VAC RLF CHECK VLV 2A NOT CLOSED (H13-P800-2 (A3)).
   - CNTMT VAC RLF CHECK VLV 1B NOT CLOSED (H13-P800-2 (F2)).
   - CNTMT VAC RLF CHECK VLV 2B NOT CLOSED (H13-P800-2 (F3)).

SAT / UNSAT

____ * 11. **Take one of the following fan control switches to START:**

- **CNTMT PURGE SUPPLY FAN A, 1M14-C001A**
- **CNTMT PURGE SUPPLY FAN B, 1M14-C001B**

STANDARD: Red light ON for CNTMT PURGE SUPPLY FAN A, 1M14-C001A.

COMMENTS:
1. Candidate was directed to startup M14 Train A per the Initiating Cue.
2. **Note: After approximately 5 minutes of supply fan operation, its control mode will automatically shift from flow to d/p control.**

SAT / UNSAT

____ 12. If necessary, adjust flow rates per Attachment 8, Intermittent and Refuel Mode Fan Settings.

STANDARD: If required, contacts Non-Licensed Operator to direct him to verify the system fan settings are adjusted to the proper Intermittent Mode flow settings per Attachment 8, Intermittent and Refuel Mode Fan Settings.

COMMENTS:
1. **The candidate should wait at least 5 minutes for any Containment Vacuum Breaker alarm(s) on panel H13-P800 to clear before he directs the Non-Licensed Operator to adjust any fan settings.**

   All open Containment vacuum breakers did re-close in approximately 5 minutes.
2. The Simulator IC already contains the correct Intermittent Mode flow settings. However, if the candidate asks the Non-Licensed Operator for the specific values, then the Simulator Driver must refer to Attachment 8 for the exact values to report.

SAT / UNSAT

_____ 13. If required, verify temperature controller 1M14-R022A is set to maintain Containment temperature > 60 °F (normally set at 65 °F).

STANDARD: Contacts Non-Licensed Operator to verify temperature controller 1M14-R022A is set at 65 °F.

COMMENTS: Non-Licensed Operator will report that temperature controller 1M14-R022A is set to 65 °F.

SAT / UNSAT

_____ 14. Verifies the Chemistry Unit has taken a sample(s) per REC-0104.

STANDARD: Contacts the Chemistry Unit to determine if a sample has been taken per REC-0104.

COMMENTS:
1. Sample does <u>not</u> need to be completed before the system startup is performed. However, the sample must be completed before the system can be shutdown.
2. This sample is an ODCM requirement.
3. As a Chemistry Unit Supervisor, inform the candidate that the M14 sample has been taken per REC-0104.

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: Containment Vessel and Drywell Purge (CVDWP) Train 'A' is operating in the Intermittent Mode.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.e

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.e

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ /_____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE B.1.e
Attachment #1

Initial Conditions:	Plant startup is in progress. Primary Containment integrity is set. The drywell purge supply ducting is filled. Health Physics has requested the startup of the M14 System for 'air quality considerations for personnel entry'. The expected duration of M14 operation will be 2 hours.
Initiating Cue:	The Unit Supervisor directs you to startup M14 Train 'A' in the Intermittent mode in accordance with SOI-M14.

Perry JPM B.1.e

Startup to Intermittent Mode

Reference Materials

3. The airflow adjustment for CNTMT PURGE SUPP FAN (A)B, 1M14-C001A(B), is located on Airflow Control Center, 1M14-K135A(B).

4. Beacon control switches are located on local panels 1H51-P959 and P960.

4.1 Startup to Intermittent Mode

NOTE: During Modes 1, 2, or 3, M14 System operation should be restricted, when possible, to between 1100 and 1600 hours. This will result in lower off-site noble gas doses due to favorable meteorological conditions.

1. If outside ambient air temperature is ≤-20°F, do not perform this section.

NOTE: ONI-R36-2 does not allow Intermittent Mode operation when outside air ambient air temperature is ≤-20°F.

1a. If P55 is not available and outside ambient air temperature is <50°F but ≥40°F then establish monitoring of the following parameters on Attachment 10 (Containment Temperature Data Sheet) at 8 hour intervals:

Outside ambient air temperature	-	≥40°F
Containment average temperature	-	≥60°F
Suppression pool temperature	-	≥60°F
Annulus Temperature	-	≥60°F

2. If in Modes 1, 2, or 3, verify the drywell purge supply ducting is filled.

NOTE: The ducting must be filled prior to Reactor Startup per IOI-1 or IOI-2.

3. If either the containment equipment hatch is removed or a containment personnel air lock has been overridden with both doors open, open Breaker #27 in K-1-D, 1R25-S053, to place the supply fans in flow control mode.

NOTE: Opening K-1-D-CB27 will actuate annunciator F6, CNTMT PURGE SUPP AIR A & B DP CONT PWR LOSS, on P800.

4. Notify the Chemistry Unit to sample per REC-0104.

5. Notify the Health Physics Unit of the expected duration of M14 operation.

6. Verify system fan settings adjusted per Attachment 8, Intermittent and Refuel Mode Fan Settings.

NOTE: Fan setting adjustments should only be necessary if the system was previously operated in a different mode, although fine tuning may be required.

7. Deleted

8. Take the following valve control switches to OPEN:

   a. CNTMT PURGE EXH BYP SECOND ISOL DMPR, 1M14-F200
   b. CNTMT PURGE EXH BYP FIRST ISOL DMPR, 1M14-F205
   c. CNTMT & DW EXH OTBD ISOL DMPR, 1M14-F090
   d. CNTMT PURGE SUPP BYP FIRST ISOL DMPR, 1M14-F190
   e. CNTMT PURGE SUPP BYP SECOND ISOL DMPR, 1M14-F195
   f. CNTMT PURGE SUPP OTBD ISOL DMPR, 1M14-F040

9. If outside air temperature is ≤35°F, slowly adjust temperature controller 1M14-R022A(B), located on 1H51-P158, to the maximum setpoint (approximately 90°F).

NOTE: Startup of the Purge Exhaust Fan may cause the Containment Vacuum Breaker(s) to lift until the system startup is completed. This is an expected occurrence and need not be reported. The event(s) should be recorded in the Plant Narrative Log.

10. Take one of the following fan control switches to START:

    a. CNTMT & DW PURGE EXH FAN A, 1M14-C003A
    b. CNTMT & DW PURGE EXH FAN B, 1M14-C003B

11. Take one of the following fan control switches to START:

    a. CNTMT PURGE SUPP FAN A, 1M14-C001A
    b. CNTMT PURGE SUPP FAN B, 1M14-C001B

    NOTE: After approximately 5 minutes of supply fan operation, its control mode will automatically shift from flow to Δp control..

12. If necessary, adjust flowrates per Attachment 8, Intermittent and Refuel Mode Fan Settings.

NOTE: In cold weather, very slow adjustment of controller 1M14-R022A(B) is required to prevent complete closure of the temperature control valve with the resultant potential of a low temperature fan trip.

13. If required, verify temperature controller 1M14-R022A(B) is set to maintain Containment temperature >60°F (normally set at 65°F).

14. Verify the Chemistry Unit has taken a sample(s) per REC-0104.

15. Deleted

4.2 Startup to Refuel Mode

****

CAUTION

During Modes 1, 2, or 3, the Containment Vessel and Drywell Purge System shall not be operated in the Refuel Mode and shall be administratively sealed using keylock switches. <L00425, L00385>

****

1. If outside ambient air temperature is ≤-5°F, do not perform this section.

   NOTE: ONI-R36-2 does not allow Refuel Mode operation when outside air ambient air temperature is ≤-5°F.

1a. If P55 is not available and outside ambient air temperature is <50°F but ≥40°F then establish monitoring of the following parameters on Attachment 10 (Containment Temperature Data Sheet) at 8 hour intervals:

Outside ambient air temperature	-	≥40°F
Containment average temperature	-	≥60°F
Suppression pool temperature	-	≥60°F
Annulus Temperature	-	≥60°F

2. Verify the drywell purge supply ducting is drained per Draining the Drywell Purge Supply Ducting.

3. Perform tasks 1M14C0002A file 001 and 1M14C0002B file 001 if required.

4. If applicable, perform SVI-M14-T2003, Containment Inboard and Drywell Purge Supply/Exhaust Isolation Dampers Operability Test.

5. If either the containment equipment hatch is removed or a containment personnel air lock has been overridden with both doors open, open Breaker #27 in K-1-D, 1R25-S053, to place the supply fans in flow control mode.

   NOTE: Opening K-1-D-CB27 will actuate annunciator F6, CNTMT PURGE SUPP AIR A & B DP CONT PWR LOSS, on P800.

6. Notify the Chemistry Unit to sample per REC-0104.

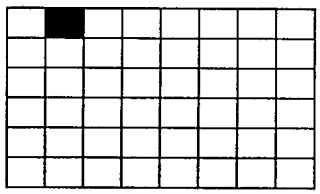
7. Notify the Health Physics Unit of the expected duration of M14 operation.

Computer Point ID
None

SER Address
None

CNTMT VAC RLF
CHECK VLV 1A
NOT CLOSED

A2



1.0 Cause of Alarm

1. CNTMT VAC RLF AOV CHECK VALVE, 1M17-F010, not fully closed as sensed by limit switch 1M17-N011. Resets when valve is fully closed.

2. Check valve opening could be caused by an atmosphere to Containment differential pressure of approximately 0.1 PSID. Differential could be caused by:

   a. Suppression Pool level change
   b. M14 operation in the flow control mode.

2.0 Automatic Action

None

3.0 Immediate Operator Action

None

4.0 Subsequent Operator Action

1. Determine if the check valve should be open by checking containment/atmosphere differential pressure indicators 1M17-N037 and 1M17-N047 on 1H13-P868, and 1M17-N018 and 1M17-N027 on 1H13-P869.

2. If check valve is open, with no vacuum condition inside the Containment, close CNTMT VAC RLF MOV ISOL VALVE 1M17-F015.

4.1 Technical Specification

1. 3.6.5.1, Containment Vacuum Breakers
   {3.6.1.11, Containment Vacuum Breakers}

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Facility: PERRY Task No: 212-505-05-01

JPM No: B.1.f

Task Title: **Pulling Scram Fuses**

K/A Reference:			
	295037	EA1.01 (4.6/4.6)	
	295015	EA1.01 (4.0/4.2)	
	212000	A4.01 (4.6 / 4.6)	

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Task Standard:	**All scram solenoids were de-energized resulting in the inward movement of control rods in accordance with PEI-SPI 1.1**
Required Materials:	Simulator setup is per specified instructions for this NRC exam.
General References:	PEI-SPI 1.1, Pulling Scram Fuses Revision 0
Initial Conditions:	**A reactor scram signal and alternate rod insertion (ARI) signal have been generated and control rods have failed to insert. The Group A SCRAM SOLENOID VLVS status lights on H13-P680 are still energized. PEI-B13, RPV Control (ATWS) has been entered.**
Initiating Cue:	**The Unit Supervisor directs you to insert control rods by pulling scram fuses to de-energize the scram solenoids in accordance with PEI-SPI 1.1.**
Time Critical Task:	YES/NO X
Validation Time:	10 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD CAPITAL** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

* 1. **IF any SCRAM SOL VLVS status lights are energized: THEN INSERT a scram as follows:**

REMOVE the following fuses to open scram valves:

Panel		Fuse	
MPL	**Bay**	**Block (Clip)**	**Wire**
H13-P694	**B**	**F22 (F18D)**	**C71A106X1**
H13-P694	**B**	**F23 (F18H)**	**C71A107X1**
H13-P691	**A**	**F25 (F18A)**	**C71A10X1**
H13-P691	**A**	**F26 (F18E)**	**C71A101X1**
H13-P692	**A**	**F30 (F18B)**	**C71A102X1**
H13-P692	**A**	**F31 (F18F)**	**C71A103X1**
H13-P693	**B**	**F30 (F18C)**	**C71A104X1**
H13-P693	**B**	**F31 (F18G)**	**C71A105X1**

STANDARD: Each fuse is correctly identified and removed. All SCRAM SOL VLVS status lights are de-energized on H13-P680.

COMMENTS:

1. The candidate may remove the specified fuses in any order.
2. All fuses are located in the PEI-SPI panel in the simulator.
3. The candidate is expected to locate the appropriate back panels for the specified fuses to be removed. Instructions inside of each back panel will direct the candidate to the PEI-SPI panel where the fuses are located.
4. The candidate is expected to observe proper electrical safety precautions when working inside energized panels (i.e., removal of all metallic or loose objects such as rings, watches, pens, etc that could come in contact with exposed electrical circuits.
5. Electrical safety gloves are not required.

SAT / UNSAT START TIME: _____

---

* 2. **REMOVE the following fuses to close SDV vent and drain valves:**

Panel		Fuse	
MPL	**Bay**	**Block (Clip)**	**Wire**
H13-P692	**A**	**F17 (F17B)**	**C71A0615X1**
H13-P691	**A**	**F20 (F17A)**	**C71A0515X1**

STANDARD: Each fuse is correctly identified and removed. SDV vent and drain valve Green CLOSED lights are ON at H13-P680.

COMMENTS:

1. **All control rods may not fully insert. A hydraulic lock may occur once all the scram solenoids are de-energized. However, inward rod motion will be observed.**
2. The candidate should return to H13-P680 and verify:
   - All inward rod motion has stopped (all rods are full in)

SAT / UNSAT

_____ 3. WHEN all inward rod motion is stopped,
THEN REPLACE fuses as follows:

REPLACE the following fuses to close scram valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P694	B	F22 (F18D)	C71A106X1
H13-P694	B	F23 (F18H)	C71A107X1
H13-P691	A	F25 (F18A)	C71A10X1
H13-P691	A	F26 (F18E)	C71A101X1
H13-P692	A	F30 (F18B)	C71A102X1
H13-P692	A	F31 (F18F)	C71A103X1
H13-P693	B	F30 (F18C)	C71A104X1
H13-P693	B	F31 (F18G)	C71A105X1

STANDARD: Each fuse is correctly identified and reinstalled.

COMMENTS: **1. If all rods are full in:**

As the Unit Supervisor, direct candidate to complete the PEI-SPI.

2. If all rods are not full in:

As the Unit Supervisor, inform the candidate that inward rod motion was observed and has stopped. Direct the candidate to complete the PEI-SPI.

SAT / UNSAT

_____ 4. REPLACE the following fuses to open SDV vent and drain valves:

Panel		Fuse	
MPL	**Bay**	**Block (Clip)**	**Wire**
H13-P692	**A**	**F17 (F17B)**	**C71A0615X1**
H13-P691	**A**	**F20 (F17A)**	**C71A0515X1**

STANDARD: Each fuse is correctly identified and reinstalled.

COMMENTS: **If all rods are not full in:**

As the Unit Supervisor, inform the candidate that another operator will be assigned to perform PEI-SPI 1.1 again.

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: All scram solenoids were de-energized resulting in the inward movement of control rods.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.f

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE WORKSHEET
Attachment #1

Initial Conditions:	**A reactor scram signal has been generated and control rods have failed to insert. The SCRAM SOLENOID VLVS status lights on H13-P680 are still energized. PEI-B13, RPV Control (ATWS) has been entered.**
Initiating Cue:	**The Unit Supervisor directs you to insert control rods by pulling scram fuses to de-energize the scram solenoids in accordance with PEI-SPI 1.1.**

Perry JPM B.1.f

Pulling Scram Fuses

Reference Materials

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Plant Emergency Instruction

TITLE: SPECIAL PLANT INSTRUCTION 1.1

PULLING SCRAM FUSES

REVISION: 0 EFFECTIVE DATE: 8-19-94

PREPARED: PEI Improvement Team Judy A. Rausch 7/12/94 Date

REVIEWED: Peter J. Schaefer 7/12/94 Date

PORC REVIEW AND RECOMMENDATION FOR APPROVAL MEETING NUMBER: 94-0126

DATE: 7/16/94

APPROVED: David P. Boyce 8/16/94 Date

PEI-SPI 1.1 Pulling Scram Fuses

ENTRY CONDITIONS

This instruction is entered during an ATWS when RPS signals fail to de-energize the scram solenoids and open the scram valves. This is indicated by the SCRAM SOL VLVS status lights still lit on H13-P680 above the RPS manual scram switches.

SCOPE

This instruction provides a method to insert control rods by pulling scram fuses to de-energize the scram solenoids. Fuses are also pulled to shut the SDV vent and drain valves while the SDV is being filled.

NECESSARY EQUIPMENT

Control Room PEI-SPI File Cabinet:
- one fuse puller

LOCATION OF REQUIRED LOCAL ACTIONS

None

(CONTINUED ON NEXT PAGE)

PEI-SPI 1.1 Pulling Scram Fuses (Continued)

ACTIONS

1.0 IF any SCRAM SOL VLVS status lights are energized, THEN INSERT a scram as follows:

****
*
* CAUTION
*
* Leads or termination points may be energized.
*
****

1.1 REMOVE the following fuses to open scram valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P694	B	F22 (F18D)	C71A106X1
H13-P694	B	F23 (F18H)	C71A107X1
H13-P691	A	F25 (F18A)	C71A10X1
H13-P691	A	F26 (F18E)	C71A101X1
H13-P692	A	F30 (F18B)	C71A102X1
H13-P692	A	F31 (F18F)	C71A103X1
H13-P693	B	F30 (F18C)	C71A104X1
H13-P693	B	F31 (F18G)	C71A105X1

(CONTINUED ON NEXT PAGE)

PEI-SPI 1.1 Pulling Scram Fuses (Continued)

1.2 **REMOVE** the following fuses to close SDV vent and drain valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P692	A	F17 (F17B)	C71A0615X1
H13-P691	A	F20 (F17A)	C71A0515X1

(CONTINUED ON NEXT PAGE)

PEI-SPI 1.1 Pulling Scram Fuses (Continued)

****
*
* CAUTION
*
* Leads or termination points may be energized.
*
****

2.0 **WHEN** all inward rod motion is stopped,
THEN **REPLACE** fuses as follows:

2.1 **REPLACE** the following fuses to close scram valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P694	B	F22 (F18D)	C71A106X1
H13-P694	B	F23 (F18H)	C71A107X1
H13-P691	A	F25 (F18A)	C71A10X1
H13-P691	A	F26 (F18E)	C71A101X1
H13-P692	A	F30 (F18B)	C71A102X1
H13-P692	A	F31 (F18F)	C71A103X1
H13-P693	B	F30 (F18C)	C71A104X1
H13-P693	B	F31 (F18G)	C71A105X1

(CONTINUED ON NEXT PAGE)

PEI-SPI 1.1 Pulling Scram Fuses (Continued)

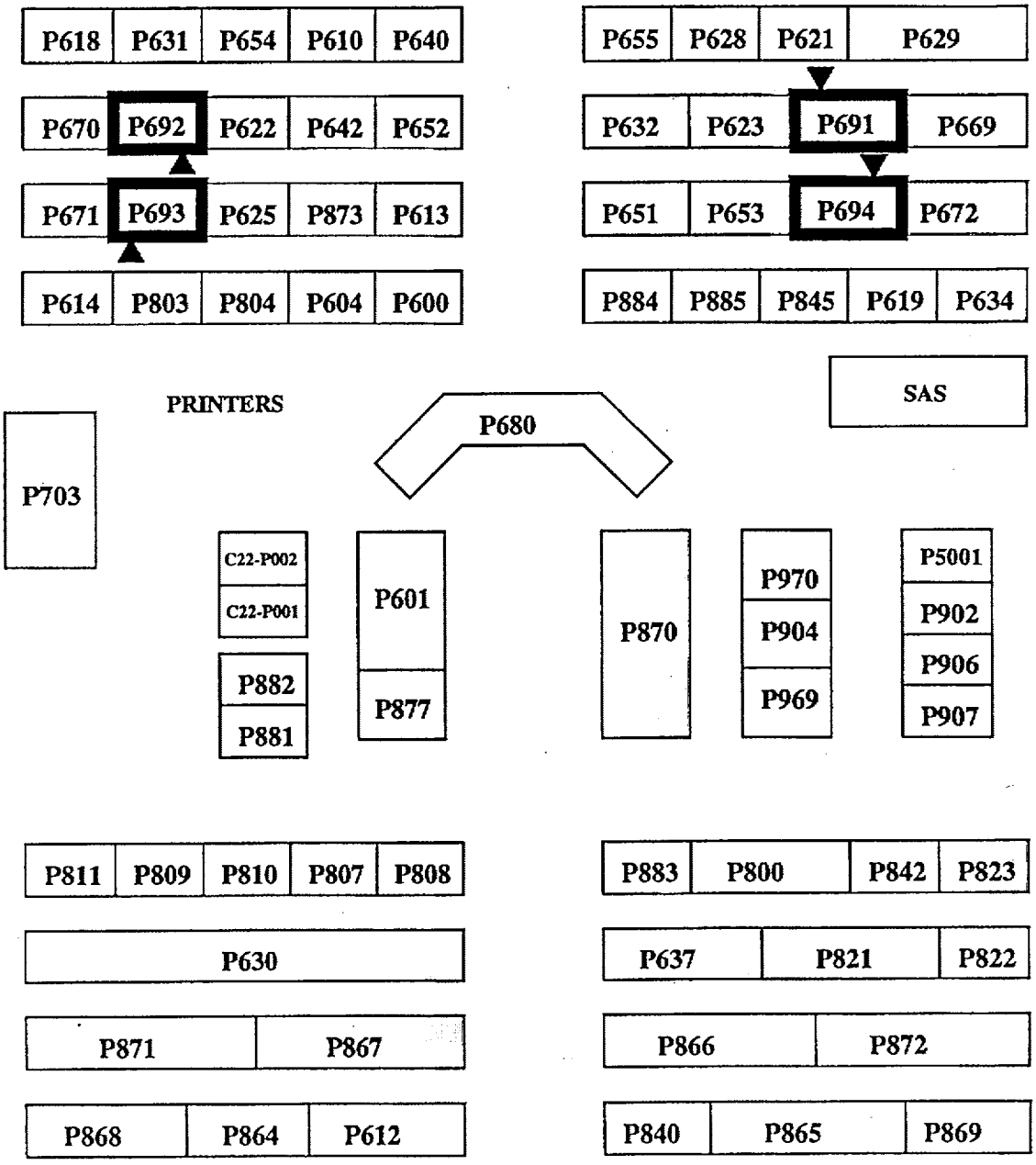
2.2 **REPLACE** the following fuses to open SDV vent and drain valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P692	A	F17 (F17B)	C71A0615X1
H13-P691	A	F20 (F17A)	C71A0515X1

==========END OF INSTRUCTION STEPS==========

PEI-SPI 1.1 Pulling Scram Fuses (Continued)

Control Room Back Panel Locations



JOB PERFORMANCE MEASURE SETUP SHEET

1. Simulator Setup Instructions: N/A

2. Location / Method: Control Room / simulate

3. Initial Condition: A Reactor Scram Signal has been generated. Appropriate steps in PEI-B13 are being followed due to several Control Rods (~41) failing to insert. Some of the SCRAM SOL VLVS status lights on P680 are still energized.

4. Initiating Cue The Unit Supervisor directs you as a Control Room Supervising Operator to perform PEI-SPI 1.1, Pulling Scram Fuses.

JPM CUE SHEET

INITIAL CONDITIONS:	A Reactor Scram Signal has been generated. Appropriate steps in PEI-B13 are being followed due to several Control Rods (~41) failing to insert. Some of the SCRAM SOL VLVS status lights on P680 are still energized.
INITIATING CUE:	The Unit Supervisor directs you as a Control Room Supervising Operator to perform PEI-SPI 1.1, Pulling Scram Fuses.

Standard: ***Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc... before performing task.***

Standard: ***Performer follows management expectations with regards to safety and communication standards.***

Critical Step: ***Performer identifies each fuse correctly and describes removal.***

Standard: ***Performer may pull in any order, but must address all fuses.***

Instructor Cue: ***If performer simulates removing a fuse, reply fuse removed.***

1.0 IF any SCRAM SOL VLVS status lights are energized,

THEN INSERT a scram as follows:

1.1 REMOVE the following fuses to open Scram valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P694	B	F22 (F18D)	C71A106X1
H13-P694	B	F23 (F18H)	C71A107X1
H13-P691	A	F25 (F18A))	C71A10X1
H13-P691	A	F26 (F18E)	C71A101X1
H13-P692	A	F30 (F18B)	C71A102X1
H13-P692	A	F31 (F18F)	C71A103X1
H13-P693	B	F30 (F18C)	C71A104X1
H13-P693	B	F30 (F18G)	C71A105X1

Critical Step: ***Performer identifies each fuse correctly and describes removal.***

Standard: ***Performer may pull in any order, but must address all fuses.***

Instructor Cue: ***If performer simulates removing a fuse, reply fuse removed.***

Performer checks for rod movement of ATWS rods after removal and SDV vent and drain valves are closed.

Instructor Cue: ***If asked, all rod motions has stopped, SCRAM SOL VLVS lights are off, the SDV vent and drain CLOSED lights are on and OPEN lights are off.***

1.2 REMOVE the following fuses to close SDV vent and drain valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P692	A	F17 (F17B)	C71A0615X1
H13-P691	A	F20 (F17A)	C71A0515X1

Standard: **Performer identifies each fuse correctly and describes installation.**

Standard: **Performer may install in any order, but must address all fuses.**

Instructor Cue: **If performer simulates installing a fuse, reply fuse installed.**

2.0 When all inward rod motion is stopped,

THEN REPLACE fuses as follows:

2.1 REPLACE the following fuses to close scram valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P694	B	F22 (F18D)	C71A106X1
H13-P694	B	F23 (F18H)	C71A107X1
H13-P691	A	F25 (F18A))	C71A10X1
H13-P691	A	F26 (F18E)	C71A101X1
H13-P692	A	F30 (F18B)	C71A102X1
H13-P692	A	F31 (F18F)	C71A103X1
H13-P693	B	F30 (F18C)	C71A104X1
H13-P693	B	F31 (F18G)	C71A105X1

Standard: **Performer identifies each fuse correctly and describes installation.**

Standard: **Performer may install in any order, but must address all fuses.**

Instructor Cue: **If performer simulates installing a fuse, reply fuse installed.**

Instructor Cue: **When fuses reinstalled, JPM is complete.**

2.2 REPLACE the following fuses to open SDV vent and drain valves:

Panel		Fuse	
MPL	Bay	Block (Clip)	Wire
H13-P692	A	F17 (F17B)	C71A0615X1
H13-P691	A	F20 (F17A)	C71A0515X1

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.g

Facility: PERRY Task No: 217-503-04-01

JPM No: B.1. g

Task Title: **RCIC Manual Initiation from Standby (Faulted)**

K/A Reference: 217000 K4.06 (3.5/3.5) A2.01 (3.8/3.7)
A4.04 (3.6/3.6)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.g

Task Standard:	**The Reactor Core Isolation Cooling System (RCIC) is manually started and is injecting into the reactor vessel in accordance with SOI-E51.**
Required Materials:	Simulator setup is per specified instructions for this NRC exam.
General References:	SOI-E51, Reactor Core Isolation Cooling System Revision 7, PIC 9 SOI-P42, Emergency Closed Cooling System Revision 7 PIC 7 SOI-P45/49, Emergency Service Water System Revision 2 PIC 21 SOI-M32, ESWPH Ventilation Revision 6 PIC 1
Initial Conditions:	**PEI-B13, RPV Control, has been entered due to RPV level less than 178 inches.**
Initiating Cue:	**The Unit Supervisor directs you to manually initiate the Reactor Core Isolation Cooling System (RCIC) from standby readiness and establish an injection rate of 700 gpm to the reactor vessel in accordance with SOI-E51.**
Time Critical Task:	YES/NO X
Validation Time:	30 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.g

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Initiate evacuation of any personnel from the Reactor Building Annulus and Containment.

STANDARD: Plant announcement is made for personnel to evacuate the Reactor Building Annulus and Containment due to RCIC system operation.

COMMENTS:

1. Candidate references SOI-E51, Section 4.3.
2. **Candidate is expected to perform a 'manual initiation of RCIC' from memory per the Operations Section Expectations Handbook. However, if the situation permits (i.e., RPV level is slowly lowering), the candidate is allowed to reference the SOI.**
3. If asked, inform student that a manual startup of ECC and ESW is not required prior to manually initiating RCIC.
4. Candidate may also request that SAS perform a security check to verify if anyone is in the Reactor Building Annulus and Containment.

SAT / UNSAT START TIME: _____

---

* 2. **Arm and depress RCIC MAN INIT pushbutton, 1E51A-S37.**

STANDARD: Candidate recognizes failure of RCIC to manually initiate from standby readiness (fault).

COMMENTS:
1. RCIC MAN INITIATION SWITCH ARMED alarm (H13-P601-21(B5) is received indicating 1E51A-S37 has been armed.
2. **Candidate informs SRO that RCIC did not initiate.**
3. **If required, as SRO, inform candidate to 'manually startup RCIC from standby readiness'.**

SAT / UNSAT

---

3. Initiate evacuation of any personnel from the Reactor Building Annulus and Containment.

STANDARD: Plant announcement is made for personnel to evacuate the Reactor Building Annulus and Containment due to RCIC system operation.

COMMENTS:
1. Candidate references SOI-E51, Section 4.4.
2. Candidate is not required to repeat this evacuation since it was previously performed in Step 1 above.
3. Next step will have candidate refer to SOI-P42, which will send candidate to SOI-P45/49, and then to SOI-M32.

SAT / UNSAT

---

* 4. **Take ESW PMP HOUSE VENT SUPP FAN 1A, 1M32-C0001A, control to START.**

STANDARD: Red light ON for ESWPH Fan A.

COMMENTS: Candidate references SOI-M32, Section 4.3.

SAT / UNSAT

---

5. Verify ESW PMP HOUSE EXH LOUVER 70A, 1M32-F070A, opens.

STANDARD: Red light ON for ESWPH EXH LOUVER F70A.

COMMENTS: Candidate returns to SOI-P45/49, Section 4.2 for next step.

SAT / UNSAT

_____ 6. Notify Chemistry to perform the following:

a. Obtain Tech Spec samples of flow through the RHR Heat Exchangers.

b. Place the ESW Chlorination System in operation for Division 1 per SOI-P48.

STANDARD: Candidate notifies Chemistry of impending ESW startup.

COMMENTS:
1. **NOTE: If plant conditions require rapid initiation of flow, notification of Chemistry should be made as soon as possible following initiation of flow.**
2. This is not a critical step because the NOTE allows the notification of Chemistry to be delayed.

SAT / UNSAT

_____ 7. Verify RHR A HX'S ESW INLET VALVE, 1P45-F014A is OPEN.

STANDARD: Red light ON for RHR A HX'S INLET VALVE, 1P45-F014A.

COMMENTS: Valve is normally in the OPEN position.

SAT / UNSAT

_____ 8. Verify RHR A HX'S ESW OUTLET VALVE, 1P45-F068A is OPEN.

STANDARD: Red light ON for RHR A HX'S OUTLET VALVE, 1P45-F068A.

COMMENTS: Valve is normally in the OPEN position.

SAT / UNSAT

---

* 9. **Take ESW PUMP A, 1P45-C001A control switch to START, and observe:**

a. ESW PUMP A DISCH VALVE, 1P45-F130A, starts opening.

b. When the discharge valve reaches 5% open, ESW PUMP A, 1P45-C001A, starts.

c. ESW PUMP A DISCH VALVE, 1P45-F130A, opens fully.

STANDARD:

1. Red and Green light ON for ESW PUMP A DISCH VALVE, 1P45-F130A.
2. Red light ON for ESW PUMP A, 1P45-C001A.
3. Red light ON for ESW PUMP A DISCH VALVE, 1P45-F130A.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.g

COMMENTS:

1. Candidate will not be able to observe when ESW PUMP A DISCH VALVE, 1P45-F130A, is at the 5% open position.

2. The following alarms will annunciate and clear immediately after ESW PUMP A DISCH VALVE, 1P45-F130A, is fully open:

   a. ESW TO DIESEL HEAT EXCHANGER FLOW LOW (H13-P877-1 (D1)).
   b. ESW FROM ECC HX A FLOW LOW (H13-P601-20 (F1)).
   c. ESW TO RHR A HX'S FLOW LOW (H13-P601-20 (H5)).
   d. ESW PUMP A DISCHARGE PRESSURE LOW (H13-P601-20 (G1)).

2. The candidate should observe initial pump starting current and normal pump current (less than 102 amps) on meter P45-R010, ESW PUMP A AMPS.

3. The candidate should observe normal pump discharge pressure (62-90 psig) on meter P45-R102A, ESW A PUMP DISCH PRESS.

4. The candidate should observe normal system flowrate (1000-1050 gpm) on meter P45-R074A, ESW DG FLOW, (2600-2730 gpm) on meter P45-R054A, ESW TO ECC HX A FLOW, and (7300-7500) on meter E12-R602A, ESW A RHR A HX FLOW

SAT / UNSAT

_____ 10. Record ESW A total flow and individual component flows in the Narrative Log.

STANDARD: Candidate records ESW A total and individual component flows in the Narrative Log.

COMMENTS:
1. The computerized Narrative Log is not available in the simulator, the candidate will use the hard copy Narrative Log maintained by the Operator at the controls.
2. **As the Unit Supervisor, you may direct the candidate to record flows at the completion of the evolution in order to expedite injection into the RPV.**

SAT / UNSAT

_____ 11. De-icing operation is required per IOI-15, Seasonal Variations, whenever service water inlet temperature falls below 34 degrees F.

STANDARD: Candidate determines that de-icing operation per IOI-15, Seasonal Variations, is not required based on a service water inlet temperature that is above 34 degrees F as read on Recorder P41-R417.

COMMENTS: Candidate returns to SOI-P42, Section 4.4 for next step.

SAT / UNSAT

---

* 12. **Take ECC PUMP A, 1P42-C001A, control switch to START.**

STANDARD: Red light ON for ECC Pump A.

COMMENTS:

1. The candidate should observe normal pump discharge pressure (110-110 psig) on meter P42-R096A, ECC A PUMP DISCH PR.
2. The candidate should observe normal system flowrate (1850-2200 gpm) on meter P42-R043A, ECC A HDR FLOW.

   The candidate may inform the Unit Supervisor that ECC A HDR FLOW is only 1800-1850 gpm.

   As the Unit Supervisor, direct the candidate to continue with the evolution.
3. Candidate returns to SOI-E51, Section 4.4 for remainder of task.

SAT / UNSAT

---

13. Verify RHR A HEAD SPRAY ISOL, 1E12-F023, shut.

STANDARD: Green light ON for RHR A HEAD SPRAY ISOL, 1E12-F023.

COMMENTS: Valve is normally in the CLOSE position.

SAT / UNSAT

---

14. Verify RCIC PUMP CST SUCTION VALVE, 1E51-F010, open.

STANDARD: Red light ON for RCIC PUMP CST SUCTION VALVE, 1E51-F010.

COMMENTS: Valve is normally in the OPEN position.

SAT / UNSAT

---

* 15. **Take RCIC TURBINE GLAND SEAL COMP, 1E51-C004, to START.**

STANDARD: Red light ON for RCIC TURBINE GLAND SEAL COMP, 1E51-C004.

COMMENTS: Gland Seal Compressor is normally not running (OFF).

SAT / UNSAT

---

* 16. **Take RCIC STEAM SHUTOFF, 1E51-F045, to OPEN to roll the RCIC Turbine.**

STANDARD: Red light ON for RCIC STEAM SHUTOFF, 1E51-F045.

COMMENTS:
1. Alarm RCIC PUMP DISCHARGE FLOW LO (H13-P601-20 (F3)) will annunciate and clear immediately after RCIC INJECTION VALVE, 1E51-F013, is fully open.
2. Valve is normally in the CLOSE position.

SAT / UNSAT

---

17. Ensure RCIC PUMP MIN FLOW VALVE, 1E51-F019, opens if RCIC flow is less than 120 gpm and the RCIC Pump discharge pressure is greater than 125 psig.

STANDARD: Red light ON for RCIC PUMP MIN FLOW VALVE, 1E51-F019.

COMMENTS:
1. Valve is normally in the CLOSE position and will automatically open.
2. RCIC injection flow to the RPV is 0 gpm until the RCIC Injection Valve, 1E51-F013, is opened in Step 19.

SAT / UNSAT

_____ 18. Verify the following valves automatically close after RCIC STEAM SHUTOFF, 1E51-F045 is open:

a. RCIC TURB CNDS TO CRW FIRST SHUTOFF, 1E51-F004.

b. RCIC TURB CNDS TO CRW SECOND SHUTOFF, 1E51-F005.

c. RHR & RCIC ST SUPP FIRST DRN SHUTOFF, 1E51-F025.

d. RHR & RCIC ST SUPP SECOND DRN SHUTOFF, 1E51-F026.

STANDARD: Green light ON for:

a. RCIC TURB CNDS TO CRW FIRST SHUTOFF, 1E51-F004.

b. RCIC TURB CNDS TO CRW SECOND SHUTOFF, 1E51-F005.

c. RHR & RCIC ST SUPP FIRST DRN SHUTOFF, 1E51-F025.

d. RHR & RCIC ST SUPP SECOND DRN SHUTOFF, 1E51-F026.

COMMENTS: Valves 1E51-F004, F025, and F026 are normally in the OPEN position and valve 1E51-F005 is normally in the CLOSED position when RCIC is in Standby.

SAT / UNSAT

* 19. **Take RCIC INJECTION VALVE, 1E51-F013, to OPEN.**

STANDARD: Red light ON for RCIC INJECTION VALVE, 1E51-F013.

COMMENTS:
1. Alarm RCIC PUMP DISCHARGE FLOW LO (H13-P601-20 (F3)) will annunciate and clear immediately after RCIC INJECTION VALVE, 1E51-F013, is fully open:
2. Candidate should observe RCIC PUMP MIN FLOW VALVE, 1E51-F019, automatically closes when RCIC pump flow is > 120 gpm and RCIC pump discharge pressure is > 125 psig.
3. Valve is normally in the CLOSE position.

SAT / UNSAT

---

20. Check RCIC INJ CHECK VALVE, 1E51-F066, valve disc open.

STANDARD: Red light ON for RCIC INJ CHECK VALVE, 1E51-F066.

COMMENTS:
1. Valve is normally in the CLOSE position.
2. **It is acceptable if RPV water level increases above RPV Level 8 (>220 inches) during the performance of the next step.**

SAT / UNSAT

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.g

_____ 21. Using RCIC PUMP FLOW CONTROL, 1E51-R600, adjust flow until the desired flow is reached.

STANDARD: Candidate verifies the RCIC PUMP FLOW CONTROL, 1E51-R600, is in the AUTO mode with a setpoint of 700 gpm.

COMMENTS:

1. The candidate should observe normal system flowrate (700 gpm max) on meter 1E51-R606, RCIC PUMP FLOW.
2. The candidate should observe RCIC pump discharge pressure (less than 100 psig above reactor pressure) on meter 1E51-R601, RCIC PUMP DISCH PRESS.
3. The candidate should observe RCIC pump suction pressure (25-30 psig from CST) on meter 1E51-R604, RCIC PUMP SUCTION PRESS.
4. The candidate should observe RCIC turbine exhaust pressure (0-10 psig) on meter 1E51-R603, RCIC TURB EXH PRESS.
5. The candidate should observe RCIC turbine speed (2000-4550 rpm) on meter 1E51R607, RCIC TURB RPM.
6. The candidate should observe RCIC turbine pressure (per reactor pressure) on meter 1E51-R602, RCIC TURB PRESS.
7. **As the Unit Supervisor, inform the candidate that you will assign another operator to monitor RCIC operation and RPV water level.**

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: The RCIC System is injecting water into the reactor vessel.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.1.g

VERIFICATION OF COMPLETION

Job Performance Measure No. B.1.g

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE B.1.g
ATACHMENT 1

Initial Conditions:	**PEI-B13, RPV Control, has been entered due to RPV level less than 178 inches.**
Initiating Cue:	**The Unit Supervisor directs you to manually initiate the Reactor Core Isolation Cooling System (RCIC) from standby readiness and establish an injection rate of 700 gpm to the reactor vessel in accordance with SOI-E51.**

Perry JPM B.1.g

Manually Initiate RCIC (Faulted)

Reference Materials

8. RHR & RCIC ST SUPP SECOND DRN SHUTOFF, 1E51-F026, closed.

9. RCIC INJ CHECK VLV, 1E51-F066, valve disc open.

10. RCIC PUMP MIN FLOW VALVE, 1E51-F019, open if pump flow is below 120 GPM with discharge pressure above 125 psig.

11. RCIC FIRST TEST VALVE TO CST, 1E51-F022, closed.

12. RCIC SECOND TEST VALVE TO CST, 1E51-F059, closed.

13. Using the RCIC PUMP FLOW CONTROL, 1E51-R600, adjust flow until the desired flow is reached.

14. Prior to lowering RCIC flow to less than 350 gpm, take manual control of RCIC flow by placing RCIC PUMP FLOW CONTROL, 1E51-R600, in MANUAL.

15. Initiate evacuation of any personnel from the Reactor Building Annulus and Containment.

4.3 Manual Initiation from Standby Readiness <B00065>

NOTE: Manual initiation of RCIC will actuate an automatic trip of the Main Turbine and Reactor Feed Pump Turbines.

NOTE: An automatic initiation of ECC and ESW will occur upon manual initiation of RCIC. If desired, a manual startup of ECC and ESW may be performed per the applicable SOI prior to RCIC Initiation.

1. Initiate evacuation of any personnel from the Reactor Building Annulus and Containment.

2. Arm, depress RCIC MAN INIT, 1E51A-S37.

   a. Verify ECC Loop A Automatic Startup from RCIC Initiation per SOI-P42.
   b. Verify ESW Automatic Startup from RCIC Initiation per SOI-P45/49.

3. Verify the RCIC system achieves the same configuration as an Automatic Initiation from Standby Readiness.

4. Using RCIC PUMP FLOW CONTROL, 1E51-R600, adjust flow until the desired flow is reached.

5. Prior to lowering RCIC flow to less than 350 gpm, take manual control of RCIC flow by placing RCIC PUMP FLOW CONTROL, 1E51-R600, in MANUAL.

4.4 Manual Startup from Standby Readiness (Injection) <B00065>

1. Initiate evacuation of any personnel from the Reactor Building Annulus and Containment.

2. Perform ECC Loop A Manual Startup per SOI-P42.

3. Verify RHR A HEAD SPRAY ISOL, 1E12-F023, shut.

4. Verify RCIC PUMP CST SUCTION VALVE, 1E51-F010, open.

5. Take RCIC TURBINE GLAND SEAL COMP, 1E51-C004, to START.

6. Take RCIC STEAM SHUTOFF, 1E51-F045, to OPEN to roll the RCIC Turbine.

7. Ensure RCIC PUMP MIN FLOW VALVE, 1E51-F019, opens if RCIC flow is less than 120 gpm and the RCIC Pump discharge pressure is greater than 125 psig.

8. Verify the following valves automatically close after RCIC STEAM SHUTOFF, 1E51-F045, is open:

   a. RCIC TURB CNDS TO CRW FIRST SHUTOFF, 1E51-F004.
   b. RCIC TURB CNDS TO CRW SECOND SHUTOFF, 1E51-F005.
   c. RHR & RCIC ST SUPP FIRST DRN SHUTOFF, 1E51-F025.
   d. RHR & RCIC ST SUPP SECOND DRN SHUTOFF, 1E51-F026.

9. Take RCIC INJECTION VALVE, 1E51-F013, to OPEN.

10. Check RCIC INJ CHECK VALVE, 1E51-F066, valve disc open.

11. Using RCIC PUMP FLOW CONTROL, 1E51-R600, adjust flow until the desired flow is reached.

12. Prior to lowering RCIC flow to less than 350 gpm, take manual control of RCIC flow by placing RCIC PUMP FLOW CONTROL, 1E51-R600, in MANUAL.

4.5 Manual Startup from Standby Readiness (CST to CST) <B00065>

1. Initiate evacuation of any personnel from the Reactor Building Annulus and Containment.

2. Perform ECC Loop A Manual Startup per SOI-P42.

3. Verify RCIC PUMP CST SUCTION VALVE, 1E51-F010, is open.

4. Take the RCIC SECOND TEST VALVE TO CST, 1E51-F059, to OPEN to provide a discharge path to the CST.

5.0 SYSTEM OPERATIONS

The following parameters should be monitored at H13-P601 during RCIC Pump and Turbine operation:

1.	RCIC PUMP FLOW, 1E51-R606	700 gpm maximum
2.	RCIC PUMP DISCH PRESS, 1E51-R601	less than 100 psig above Reactor Pressure
3.	RCIC PUMP SUCTION PRESS, 1E51-R604	25-30 psig from CST or >8.5 psig from Supr Pool
4.	RCIC TURB EHX PRESS, 1E51-R603	0-10 psig
5.	RCIC TURB RPM, 1E51-R607	2000-4550 rpm
6.	RCIC TURB PRESS, 1E51-R602	per reactor pressure
7.	RCIC Turb Lube Oil Tank Level (local), 1E51-R713	above mark on sight gauge, not to exceed 3/8 in. above mark

The following parameters should be monitored locally during RCIC Pump and Turbine operation; however, radiological conditions should be taken into consideration:

1.	Gland Seal Pressure, 1E51-R701, 1E51-R702, 1E51-R703, 1E51-R704	7-13 psig
2.	Turbine Bearing Temp, 1E51-R710 and 1E51-R711	<180°F
3.	Turbine Lube Oil Press, 1E51-R707	12-15 psig
4.	Turbine Lube Oil Cooler Outlet Temp, 1E51-R709	<160°F

5.1 RCIC Suction Shift from CST to Supr Pool

1. **If discharging to the CST:**

   a. **Hold RCIC FIRST TEST VALVE TO CST, 1E51-F022, in CLOSE until closed.**
   b. **Take RCIC SECOND TEST VALVE TO CST, 1E51-F059, to CLOSE.**
   c. **Verify RCIC PUMP MIN FLOW VALVE, 1E51-F019, opens if pump flow is less than 120 gpm with discharge pressure greater than 125 psig.**

j. ECC TO CONT CMPLX CHILLER A OUT VLV, P42-F330A, opens.
k. ECC TO CONT CMPLX CHILLER B OUT VLV, P42-F330B, opens.
l. ECC TO CONT CMPLX CHILLER A BYP VLV, P42-F150A, closes.
m. ECC TO CONT CMPLX CHILLER B BYPASS VLV, P42-F150B, closes.
n. Deleted
o. CC CHL C ISOL VLV, P42-F550, closes.
p. Control Complex Chillers A and B will restart when ECC cooling flow is established.

4.3 ECC Automatic Startup from RCIC Initiation

1. Verify ECC Pump A, 1P42-C001A, starts.

4.4 ECC Loop A(B) Manual Startup

NOTE: ECC temperatures less than 55°F require P47 to be declared inoperable.

1. If required, perform ESW Loop A(B) Manual Startup from Standby Readiness per SOI-P45/49.

2. Take ECC PUMP A(B), 1P42-C001A(B), control switch to START.

NOTE: Emergency Pump Area Cooling System (M28) fan will automatically start when the associated pump starts.

5.0 SYSTEM OPERATIONS

The following parameters should be monitored periodically during ECC System operation on ECCS Benchboard, 1H13-P601.

1. ECC A(B) PUMP DISCH PR, P42-R096A(B), 100-110 psig.

2. ECC A(B) HDR FLOW, P42-R043A(B), 1850-2200 gpm.

3. ECC A(B) HX OUT TEMP, P42-R052A(B), between 60°F and 90°F.

4. ESW TO ECC HX A(B) FLOW, P45-R054A(B), 2600-2730 gpm.

5.1 Establishing ECC Loop A(B) Flow to Control Complex Chillers

NOTE: Do not align ECC Loop A(B) to CCCW Chiller A(B) when CCCW Chiller A(B) is in Secured Status. The remaining loads on ECC Loop A(B) are not sufficient to ensure the minimum flow requirement for ECC Pump A(B) would be met if this were done.

NOTE: Performance of this section requires the completion of a Verification Checklist.

4.0 STARTUP

Controls for the ESW System are located on the ECCS Benchboard 1H13-P601, Emergency Service Water Strainer A(B) and C Control Station, 1H51-P753A(B) and 1H51-P754, RHR Tube Bundle Wtr Removal Pmp Contr Pnl, 1H51-P084A(B), and ESW Sluice Gate Control Panel, H51-P971(972). ESW system operation can also be established from the Remote Shutdown System per IOI-11. Controls for the ESW Screen Wash system are located on Emergency Service Water Screen and Screen-Wash System A(B) Division 1(2), H51-P077A(B) control panels.

4.1 ESW Loop A(B) Secured Status to Standby Readiness

NOTE: Independent verification is not required since all operated components are monitored by the INOP and BYPASS matrix.

1. Confirm P41 To ESW Keep Fill Loop A(B) Isol, 1P41-F958(F957) locked open. If 1P41-F958(F957) is not locked open or keepfill has been secured, ESW Loop A(B) Fill and Vent must be performed.

2. Rack in ESW PUMP A(B), 1P45-C001A(B), breaker, EH1106(EH1205).

3. Close ESW PUMP A(B) DISCHARGE MOV, 1P45-F130A(B), disconnect switch at MCC EF1A(C)12-H.

4.2 ESW Loop A(B) Manual Startup from Standby Readiness <F01460>

NOTE: ECC temperatures of less than 55°F require P47 to be declared inoperable.

1. Per SOI-M32 perform either step a, preferred, or step b, if step a cannot be performed:

   a. ESW Pumphouse Ventilation Fan A(B), 1M32-C001A(B)
   b. ESW Pumphouse Ventilation Fan B(A), 1M32-C001B(A)

NOTE: If plant conditions require rapid initiation of flow, notification of Chemistry should be made as soon as possible following the initiation of flow.

2. Notify Chemistry to perform the following:

   a. Obtain Tech Spec samples of flow through the RHR Heat Exchangers.
   b. Place the Emergency Service Water Chlorination System in operation for Division 1(2) per SOI-P48.

3. Verify RHR A(B) HX'S ESW INLET VALVE, 1P45-F014A(B) is OPEN.

4. Verify RHR A(B) HX'S ESW OUTLET VALVE, 1P45-F068A(B) is OPEN.

5. Deleted

6. Take ESW PUMP A(B), 1P45-C001A(B) control switch to START, and observe:

   a. ESW PUMP A(B) DISCH VALVE, 1P45-F130 A(B), starts opening.
   b. When the discharge valve reaches approximately 5% open, ESW PUMP A(B), 1P45-C001A(B), starts.
   c. ESW PUMP A(B) DISCH VALVE, 1P45-F130A(B), opens fully.

7. Record ESW A(B) total flow and individual component flows in the Narrative Log.

8. De-icing Operation is required per IOI-15, Seasonal Variations, whenever service water inlet temperature falls below 34°F.

4.3 ESW Loop A(B) Automatic Startup

ESW Loop A or B automatic startup will occur 20 seconds after the receipt of any of the following signals: Divisional Standby Diesel Generator exceeds 441 RPM, 1.68 psig DW Pressure, RPV Level - 1, Loss of Offsite Power and RCIC Initiation (ESW Loop A only). These signals will cause the following to occur:

1. ESW PUMP A(B) DISCH VALVE, 1P45-F130A(B), starts opening.

2. When the discharge valve reaches approximately 5% open, ESW PUMP A(B), 1P45-C001A(B), starts.

3. RHR A(B) HX'S ESW INLET VALVE, 1P45-F014A(B), and RHR A(B) HX's ESW OUTLET VALVE, 1P45-F068A(B), open, if previously closed, upon a ESW Pump A(B) start.

4. ESW PUMP A(B) DISCH VALVE, 1P45-F130A(B), fully opens.

5. ESW Pumphouse Ventilation (M32) starts.

6. Deleted

7. Notify Chemistry as soon as possible after automatic startup to perform the following:

   a. Obtain Tech Spec samples of flow through the RHR Heat Exchangers.

2. If level differential across ESW Traveling Screens A(B), P49-D001A(B) exceeds 6 inches, the following events will occur:

   a. ESW Screen Wash Pump A(B), P49-C002A(B) starts.
   b. ESW Screen Wash Pump Discharge Strainer A(B), P49-D003A(B) starts backwashing in slow speed.
   c. ESW Traveling Screen A(B), P49-D001A(B) start.

   NOTE: If the level differential across the traveling screen increases to 10 inches it will shift to fast speed.

5.0 SYSTEM OPERATIONS

5.1 Loop A(B) Operation

1. The following parameters should be monitored during operation from the ECCS Benchboard, 1H13-P601, and the Diesel Generator Benchboard, 1H13-P877:

   a. ESW A(B) PUMP DISCH PRESS, 1P45-R102A(B), 62-90 psig (based on field performance data).
   b. ESW A(B) PUMP AMPS, 1P45-R010(R011), less than 102 amps.
   c. ESW TO ECC HX A(B) FLOW, 1P45-R054A(B), 2600-2730 gpm.
   d. ESW DG FLOW, 1P45-R074A(B), 1000-1050 gpm.
   e. ESW A(B) RHR A(B) HX FLOW, 1E12-R602A(B), 7300-7500 gpm.
   f. Computer point P45BA014, ESW FLOW, approximately equal to the sum of the flows in all running loops.
   g. ESW A(B) INLET TEMP, P45-R091A(B), <85°F.

2. Deleted

1. For ESWPH Vent Train A, perform the following:

   a. Close MCC EF1A12, disc, J; ESW Pump House Vent Supply Fan A, 1M32-C001A.
   b. Adjust ESW PUMPHOUSE TEMP CONT, 1M32-R020A, to 80°F and place in AUTO.

2. For ESWPH Vent Train B, perform the following:

   a. Close MCC EF1C12, disc, J; ESW Pump House Vent Supply Fan B, 1M32-C001B.
   b. Adjust ESW PUMPHOUSE TEMP CONT, 1M32-R020B, to 80°F and place in AUTO.

3. Perform independent verification of required components.

4.2 Automatic Startup from Standby Readiness

The ESW Pumphouse Ventilation System will start upon initiation of an ESW Pump start.

1. Verify the following sequence of events occur:

   a. ESW PMP HOUSE VENT SUPP FAN 1A(B), 1M32-C001A(B), starts.
   b. ESW PMP HOUSE EXH LOUVER 70A(B), 1M32-F070A(B), opens.

NOTE: Vent Fan A(B) Inlet Damper, 1M32-F040A(B), and Vent Fan A(B) Rcirc Damper, 1M32-F050A(B), controlled by Temperature Controller, 1M32-R020A(B), will throttle as necessary to maintain ESW Pumphouse temperature above 60°F.

4.3 Manual Startup from Standby Readiness

1. Take ESW PMP HOUSE VENT SUPP FAN 1A(B), 1M32-C001A(B), control switch to START.

2. Verify ESW PMP HOUSE EXH LOUVER 70A(B), 1M32-F070A(B), opens.

NOTE: Vent Fan A(B) Inlet Damper, 1M32-F040A(B), and Vent Fan A(B) Rcirc Damper, 1M32-F050A(B), controlled by Temperature Controller, 1M32-R020A(B), will throttle as necessary to maintain ESW Pumphouse temperature above 60°F.

5.0 SYSTEM OPERATIONS

1. ESW Pumphouse ambient temperature shall be maintained above 40°F at all times. <F00318>

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.a

Facility: PERRY Task No: 205-574-05-01

JPM No: B.2.a

Task Title: RHR C Runout Injection

K/A Reference: 203000 A4.01 (4.1 / 4.1)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION

This JPM is a simulation. The student shall not physically manipulate plant equipment. If necessary, remind the student that this JPM is a simulation, not an actual performance.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.a

Task Standard:	**LPCI C Injection Valve 1E12-F042C seal-in logic has been defeated with MCC EF1D07 Compartment Y cubicle energized.**
Required Materials:	Working copy of PEI-SPI 6.5, RHR C Runout Injection Pictures of local MCC EF1D07 Compartment Y
General References:	PEI-SPI 6.5, RHR C Runout Injection Revision 0
Initial Conditions:	**An ATWS has occurred. The plant is being operated in accordance with PEI-B13, RPV Control (ATWS). Preparation for controlled injection into the RPV inside the shroud with RHR C is in progress. The LPCI 'C' LOGIC BYP E12-F021 keylock switch has been placed in BYPASS at Control Room panel H13-P618.**
Initiating Cue:	**The Unit Supervisor directs you, as an in-plant operator, to coordinate with the Control Room to defeat the seal-in logic for the LPCI C Injection Valve, E12-F042C, in accordance with PEI-SPI 6.5, RHR C Runout Injection.**
Time Critical Task:	YES/NO X
Validation Time:	15 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.a

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Obtains copy of PEI-SPI 6.5, RHR C Runout Injection, to be used in the field during task performance.

STANDARD: PEI-SPI 6.5 obtained from OSC PEI File Cabinet located outside of the OSC at Control Complex 599'.

COMMENTS:

1. When candidate has located the OSC PEI File Cabinet, inform the candidate that he is not to break the locking tab on the PEI-SPI file cabinet.

   Provide candidate with a copy of PEI-SPI 6.5.

2. If the OSC PEI File Cabinet locking tab is broken, inform the Perry examination representative so that a new locking tab can be installed.

3. Candidate should verbalize the tools that are required in the field to perform this task as listed in PEI-SPI 6.5 (one flathead screwdriver, one capture screwdriver, and one pair of gloves).

SAT / UNSAT START TIME: _____

_____ 2. Contact the Control Room.

STANDARD: Verifies the Control Room Operator is ready for the in-plant actions to be performed.

COMMENTS:

1. **As the Control Room Operator, inform the candidate that Step 1.1 is completed.**
2. The completion of Step 1.1was indirectly reported as completed in the Initial Condition summary.
3. All task steps will be performed at Control Complex 620', Division 2 Switchgear Room at MCC EF1D07 Compartment Y.

SAT / UNSAT

---

* ____ 3. **OPEN Compartment Y disconnect switch.**

STANDARD: Locates the correct disconnect switch; describes action required to open the disconnect switch; and, stating the final position of the disconnect switch (open), operates the disconnect switch in the downward direction.

COMMENTS:

1. All PEI MCC Compartments in the field are identified with a plastic placard consisting of an orange background with white lettering.
2. **Cue the candidate that MCC EF1D07 Compartment Y disconnect switch for valve E12-F042C is open.**

SAT / UNSAT

---

* 4. **OPEN Compartment Y door.**

STANDARD: Locates the correct compartment door; describes action required to open the compartment door; and opens the compartment door.

COMMENTS:

1. **Cue the candidate that MCC EF1D07 Compartment Y door is open.**
2. **For safety considerations, the candidate will not actually open the compartment door.**

   Use the enclosed picture (EF1D07 #2) for internal operations of MCC EF1D07 Compartment Y in the next step.

SAT / UNSAT

---

* 5. **REMOVE terminal strip cover concealing terminal 4, terminal 6, and terminal 8.**

STANDARD: Locates the correct terminal strip concealing terminals 4, 6, and 8; describes action to remove the terminal strip cover; and removes the terminal strip cover.

COMMENTS:

1. The candidate is expected to observe proper electrical safety precautions when working inside energized panels (i.e., removal of all metallic or loose objects such as rings, watches, pens, etc that could come in contact with exposed electrical circuits, use of electrical safety gloves, etc.)
2. **Cue the candidate that the terminal strip cover is removed.**
3. **Use the enclosed picture (EF1D07 #3) for internal operations of MCC EF1D07 Compartment Y in the next step.**

SAT / UNSAT

---

* 6. **PLACE <u>both</u> wires 1E12A3405C on a spare terminal as follows:**

1. **REMOVE <u>both</u> wires 1E12A3405C from terminal 4.**
2. **CONNECT <u>both</u> wires 1E12A3405C to terminal 8.**

STANDARD: Locates both wires 1E12A3405C on terminal 4; describes action to remove both wires from terminal 4; describes action to connect both wires to terminal 8; and removes both wires from terminal 4 and connects both wires to terminal 8.

COMMENTS:
1. Terminal 8 is a spare terminal.
2. PEI wires can be identified by wire markers consisting of a red background with white lettering.
3. **Cue the candidate that both wires 1E12A3405C have been removed from terminal 4 and connected to terminal 8.**
4. **Use the enclosed picture (EF1D07 #3) for internal operations of MCC EF1D07 Compartment Y in the next step.**

SAT / UNSAT

---

* 7. **REMOVE wire 1E12A3419A from terminal 6.**

STANDARD: Locates wire 1E12A3419A on terminal 6; describes action to remove wire from terminal 6; describes action to insulate the exposed of the wire; and removes wire from terminal 6 and insulates the exposed end of the wire.

COMMENTS: **Using the enclosed picture (EF1D07 #4) for internal operations of MCC EF1D07 Compartment Y, cue the candidate that wire 1E12A3419A has been removed from terminal 6 and the exposed wire has been insulated.**

SAT / UNSAT

---

* 8. **Close Compartment Y door.**

STANDARD: Locates the correct compartment door; describes action required to close the compartment door; and closes the compartment door.

COMMENTS: **Cue the candidate that MCC EF1D07 Compartment Y door is closed.**

SAT / UNSAT

---

* 9. **CLOSE Compartment Y disconnect switch.**

STANDARD: Locates the correct disconnect switch; describes action required to close the disconnect switch; and, stating the final position of the disconnect switch (close), operates the disconnect switch in the upward direction.

COMMENTS:
1. Prior to closing the disconnect switch, the candidate should inform the Control Room.
2. **Cue the candidate that MCC EF1D07 Compartment Y disconnect switch for valve E12-F042C is closed.**

SAT / UNSAT

---

10. Contacts the Control Room.

STANDARD: Notifies the Control Room Operator that Step 1.2 for PEI-SPI 6.5 has been completed.

COMMENTS: **As the Control Room Operator, inform the candidate to return to the Control Room.**

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: **LPCI C Injection Valve 1E12-F042C seal-in logic has been defeated with MCC EF1D07 Compartment Y cubicle energized.**

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.a

VERIFICATION OF COMPLETION

Job Performance Measure No. B.2.a

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

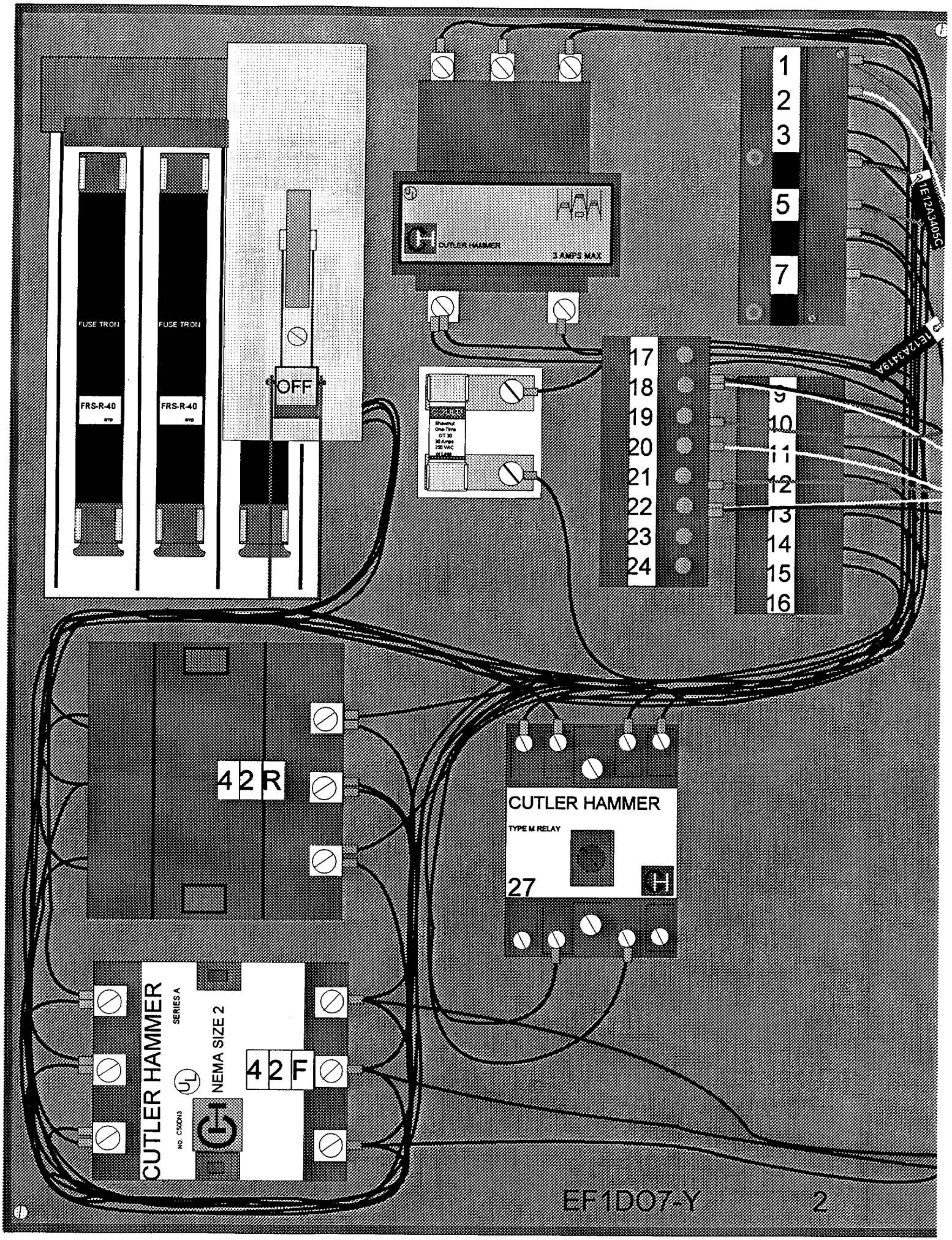
Results: Circle One SAT UNSAT

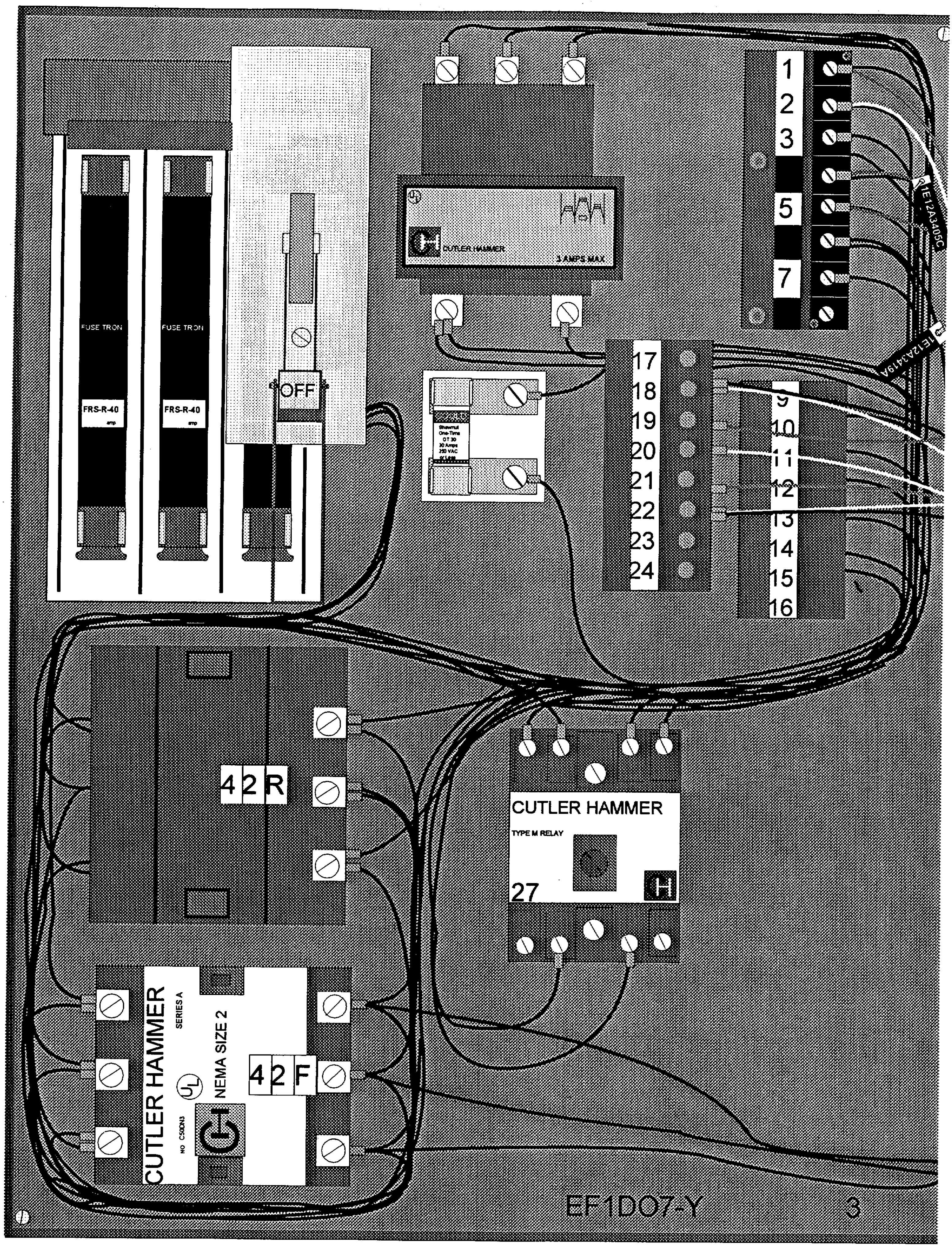
Time to complete: _____

Examiner's signature and date: _____ / _____

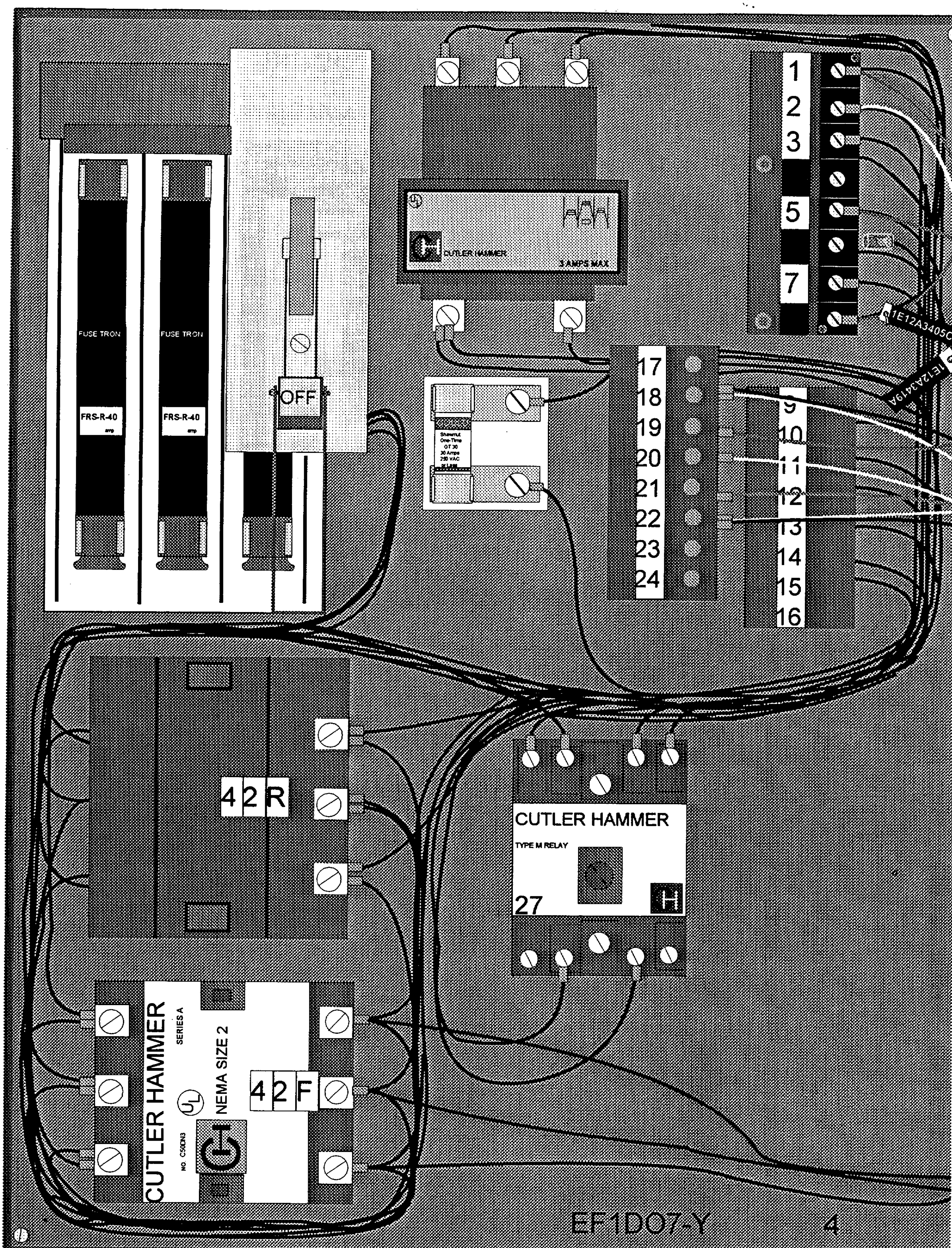
PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE B.2.a
Attachment #1

Initial Conditions:	**An ATWS has occurred. The plant is being operated in accordance with PEI-B13, RPV Control (ATWS). Preparation for controlled injection into the RPV inside the shroud with RHR C is in progress. The LPCI 'C' LOGIC BYP E12-F021 keylock switch has been placed in BYPASS at Control Room panel H13-P618.**
Initiating Cue:	**The Unit Supervisor directs you, as an in-plant operator, to coordinate with the Control Room to defeat the seal-in logic for the LPCI C Injection Valve, E12-F042C, in accordance with PEI-SPI 6.5, RHR C Runout Injection.**


FUSE TRON
FRS-R-40
FUSE TRON
FRS-R-40
OFF
CUTLER HAMMER
3 AMPS MAX
1
2
3
5
7
17
18
19
20
21
22
23
24
9
10
11
12
13
14
15
16
42R
CUTLER HAMMER
TYPE M RELAY
27
H
CUTLER HAMMER
SERIES A
NEMA SIZE 2
42F



1E12A3405C
1E12A3419A
1
2
3
5
7
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
CUTLER HAMMER
3 AMPS MAX
FUSE TRON
FRS-R-40
OFF
42R
CUTLER HAMMER
TYPE M RELAY
27
H
CUTLER HAMMER
SERIES A
NEMA SIZE 2
NO C50DN3
42F
EF1D07-Y
3



FUSE TRON
FRS-R-40
FUSE TRON
FRS-R-40
OFF
CUTLER HAMMER
3 AMPS MAX
Shawmut One-Time OT 30 30 Amps 250 VAC
1 2 3 5 7
1E12A3405C
1E12A3419A
17 18 19 20 21 22 23 24
9 10 11 12 13 14 15 16
42R
CUTLER HAMMER
TYPE M RELAY
27
CUTLER HAMMER
SERIES A
NEMA SIZE 2
NO. C50N3
42F
EF1D07-Y
4

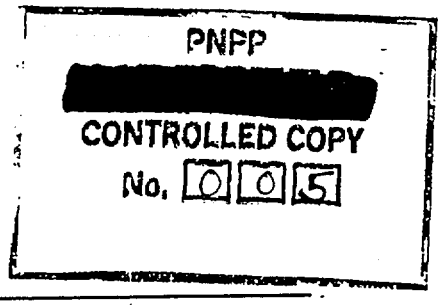
Perry JPM B.2.a

RHR C Runout Injection

Reference Materials

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL



Plant Emergency Instruction

TITLE: SPECIAL PLANT INSTRUCTION 6.5

RHR C RUNOUT INJECTION

REVISION: 0 EFFECTIVE DATE: 8-19-94

PREPARED: PEI Improvement Team Timothy A. Lausch / 8/16/94 Date

REVIEWED: Victor C. Colaiuta / 8-16-94 Date

PORC REVIEW AND RECOMMENDATION FOR APPROVAL MEETING NUMBER: 94-042

DATE: 8/16/94

APPROVED: David P. Oggianti / 8/16/94 Date

PEI-SPI 6.5 RHR C Runout Injection

ENTRY CONDITIONS

This instruction is entered when directed to inject or to prepare to inject into the RPV in a controlled manner with RHR C.

SCOPE

This instruction provides for controlled injection inside the shroud from RHR C by throttling the LPCI C injection valve after defeating its seal-in logic and bypassing the RHR C test valve isolation signal.

NECESSARY EQUIPMENT

Control Room PEI-SPI File Cabinet:
- one PEI-SPI key

CC 599' D/01, OSC PEI File Cabinet:
- one flathead screwdriver
- one capture screwdriver
- one pair gloves

LOCATION OF REQUIRED LOCAL ACTIONS

CC 620', MCC EF1D07 Compartment Y:
- B/03, LPCI C Injection Valve 1E12-F042C

(CONTINUED ON NEXT PAGE)

PEI-SPI 6.5 RHR C Runout Injection (Continued)

ACTIONS

1.0 **PREPARE** RHR C for runout injection as follows:

1.1 **AT** H13-P618,
PLACE LPCI C LOGIC BYP E12-F021 keylock switch in BYPASS.

1.2 **AT** CC 620' B/03, MCC EF1D07 Compartment Y,
PERFORM the following to defeat the seal-in logic on LPCI C Injection Valve 1E12-F042C:

1.2.1 **OPEN** Compartment Y disconnect switch.

****
*
* CAUTION
*
* Leads or termination points may be energized.
*
****

1.2.2 **OPEN** Compartment Y door.

1.2.3 **REMOVE** terminal strip cover concealing terminal 4, terminal 6, and terminal 8.

1.2.4 **PLACE** both wires 1E12A3405C on a spare terminal as follows:

1.2.4.1 **REMOVE** both wires 1E12A3405C from terminal 4.

1.2.4.2 **CONNECT** both wires 1E12A3405C to terminal 8.

1.2.5 **REMOVE** wire 1E12A3419A from terminal 6.

1.2.6 **CLOSE** Compartment Y door.

1.2.7 **CLOSE** Compartment Y disconnect switch.

(CONTINUED ON NEXT PAGE)

PEI-SPI 6.5 RHR C Runout Injection (Continued)

2.0 **WHEN** directed to inject into the RPV,
THEN **INJECT** as follows:

2.1 **VERIFY** ESW PUMP B P45-C001B is running.

2.2 **VERIFY** ECC PUMP B P42-C001B is running.

2.3 **VERIFY** RHR PUMP C E12-C002C is running.

2.4 **THROTTLE** open RHR C TEST VALVE TO SUPR POOL E12-F021 to obtain RHR C Pump flow of 4800-5000 gpm.

2.5 **PERFORM** Step 2.5.1 and Step 2.5.2 concurrently to raise RHR Pump C flow to a maximum of 8500 gpm:

2.5.1 **THROTTLE** open LPCI C INJECTION VALVE E12-F042C.

2.5.2 **THROTTLE** closed RHR C TEST VALVE TO SUPR POOL E12-F021.

==========END OF INSTRUCTION STEPS==========

PTS

REVISION HISTORY

PNPP No. 7173 Rev. 7/91

ITEM NO.	TITLE
JPMP-4205-555 -001- [SPI-6]	LPCI "C" Injection Valve Seal-in Logic Defeat

REV. 0	DATE TO SSU (Initials)	EFF DATE: 9-10-91

REV. # _____ REQUESTED BY M.S. Haskins MSH (Name) OTU (Unit) DATE 9-9-92

PREPARED BY M.S. Haskins MSH (Name) OTU (Unit) DATE 9-9-92

SYNOPSIS Incorporated changes due to new PEI-SPI revision. Added question.

DATE TO SSU (Initials)	EFF DATE: 9/9/92

REV. # _____ REQUESTED BY _____ (Name) _____ (Unit) DATE _____

PREPARED BY _____ (Name) _____ (Unit) DATE _____

SYNOPSIS _____

DATE TO SSU (Initials)	EFF DATE:

REV. # _____ REQUESTED BY _____ (Name) _____ (Unit) DATE _____

PREPARED BY _____ (Name) _____ (Unit) DATE _____

SYNOPSIS _____

DATE TO SSU (Initials)	EFF DATE:

10CFR55.45(a) _____ JPM No. JPMP-4205-001-555 [SPI-C] ~~SPI-B~~ | Updat No.1

SRO _____

RO _____

Other NLO

JOB PERFORMANCE MEASURE

Title: LPCI "C" Injection Valve Seal-in Logic Defeat

Task No. 205-~~555~~-05-~~04~~ 574 01 **K/A Catalog** 203000 OK

K/A Rating ~~4.3/3.9~~ 4.1/4.1 A4.01 **K/A Number** ~~GEN 9~~

Evaluation Method P _____ S X

Evaluation Location P X S _____ CR _____

Approximate Completion Time: 15 min.: **Time Critical** Y __ N X

Initial Conditions:

An ATWS has occurred. The plant is operating in accordance with PEI-B13. The operators need to use the LPCI "C" Pump to inject water into the reactor with control rods out.

Tools, Equipment, Other Special Requirements:

Picture of the internals of cubicle EF1D07-Y
Radio (Optional)
Electrical Safety Equipment
Screwdriver

References:

~~PEI-SPI, Rev. 2~~ | UPDATE NO. 1 PEI-SPI 6.5 REV 0

Standard (Terminating Cue):

LPCI "C" Injection Valve seal-in logic defeated and cubicle energized.

Critical Elements: (*)

~~3, 4, 5 and 6~~ | UPDATE NO. 1

Initiating Cue:

The Supervising Operator orders you to defeat the LPCI "C" Injection Valve Seal-in Logic in accordance with PEI-SPI, Section ~~3.2.~~ 6.5. | UPDATE NO. 1

Prepared	Reviewed	Approved	Date
			9-9-92

PNPP No. 7529 Rev. 1/26/95 TMA-4104

Item # JPMP-4205-001-555 [SRI-6]

UPDATE RECORD

Original Effective Date 9-9-97

Page 1 of 1

All changes, additions and deletions to the item identified above must be indicated by the R.I. on this form according to the following categories:

- *PROCEDURE CHANGE*
- *DESIGN CHANGE*
- *AREA OF WEAKNESS*
- *PLANT LAYOUT CHANGE*
- *EQUIPMENT CHANGE*
- *INDUSTRY OPERATING EXPERIENCE*
- *REGULATION CHANGE*
- *ORGANIZATION CHANGE*
- *PLANT OPERATING EXPERIENCE*
- *INFORMATION CORRECTION*
- *TRAINEE FEEDBACK*

Complete the form as follows:

SUMMARY - *Categorize the item being changed and briefly summarize. Number each item sequentially.*

REFERENCES - *List corresponding number, rev. level, title and section.*

APPROVAL - *Initial by Lead or Unit Supervisor.*

DATE ENTERED - *Self explanatory.*

All items on these sheets that refer to outside agency recommendations or Perry commitments may not be deleted from the course material without written approval of the Training Unit Supervisor, with notification to the Manager, Regulatory Affairs Section.

SUMMARY	REFERENCE	APPR.	DATE ENTERED
1) JPM Updated to match current procedure revision. Made JPM format enhancements. Deleted reference to prescribed JPM questions. All JPM pages have been affected and reprinted. No vertical bars used to indicate changes.	PI-SI 6.5 TMA-4114	RS	10-15-99

JOB PERFORMANCE MEASURE SETUP SHEET

1. Simulator Setup Instructions: N/A

2. Location / Method: Plant / simulate

3. Initial Condition: An ATWS has occurred. The plant is operating in accordance with PEI-B13. The operators need to use the LPCI C Pump to inject water into the reactor with control rods out.

4. Initiating Cue The Supervising Operator directs you, the in plant operator, to complete the steps for defeating the LPCI C Injection Valve Seal-in Logic in accordance with PEI-SPI 6.5, Steps 1.2 through 1.2.7.

JPM CUE SHEET

INITIAL CONDITIONS:	An ATWS has occurred. The plant is operating in accordance with PEI-B13. The operators need to use the LPCI C Pump to inject water into the reactor with control rods out.
INITIATING CUE:	The Supervising Operator directs you, the in plant operator, to complete the steps for defeating the LPCI C Injection Valve Seal-in Logic in accordance with PEI-SPI 6.5, Steps 1.2 through 1.2.7.

Standard: *Performer obtains or simulates obtaining all materials, procedures, tools, keys, radios, etc... before performing task.*

Standard: *Performer follows management expectations with regards to safety and communication standards.*

Critical Step: *Performer identifies correct disconnect switch and describes operation.*

Instructor Cue: ***Disconnect is open.***

1.2 AT CC 620' B/03, MCC EF1D07 Compartment Y,

PERFORM the following to defeat the seal-in logic on LPCI C

Injection Valve 1E12-F042C:

1.2.1 OPEN Compartment Y disconnect switch.

Standard: *Performer identifies correct door and describes operation.*

Instructor Cue: ***Door is open.***

Instructor Cue: ***Use enclosed picture for internal operations (EF1D07-Y #2).***

1.2.2 OPEN Compartment Y door.

Critical Step: *Performer identifies correct strip cover and describes removal of strip cover concealing terminal 4, terminal 6, and terminal 8.*

Instructor Cue: ***Strip cover is removed.***

Instructor Cue: ***Use enclosed picture for internal operations (EF1D07-Y #3).***

1.2.3 REMOVE terminal strip cover concealing terminal 4,

terminal 6, and terminal 8.

Critical Step: *Performer identifies correct wires and describes removal.*

Instructor Cue: ***Wires are removed.***
Instructor Cue: ***Use enclosed picture for internal operations (EF1D07 #3).***

1.2.4 PLACE both wires 1E12A3405C on a spare terminal as follows:

1.2.4.1 REMOVE both wires 1E12A3405C from terminal 4.

Critical Step: *Performer identifies correct wires and describes connection.*

Instructor Cue: ***Wires are connected.***
Instructor Cue: ***Use enclosed picture for internal operations (EF1D07-Y #3).***

1.2.4.2 CONNECT both wires 1E12A3405C to terminal 8.

Critical Step: *Performer identifies correct wire and describes removal.*

Standard: *Performer discusses the insulation of the exposed end.*

Instructor Cue: ***Wire is removed.***
Instructor Cue: ***Use enclosed picture for internal operations (EF1D07-Y #4)***

1.2.5 REMOVE wire 1E12A3419A from terminal 6.

Standard: *Performer identifies correct door and describes operation.*

Instructor Cue: ***Door is closed.***

1.2.6 CLOSE Compartment Y door.

Critical Step: *Performer identifies correct disconnect switch and describes operation.*

Instructor Cue: ***Disconnect is closed.***

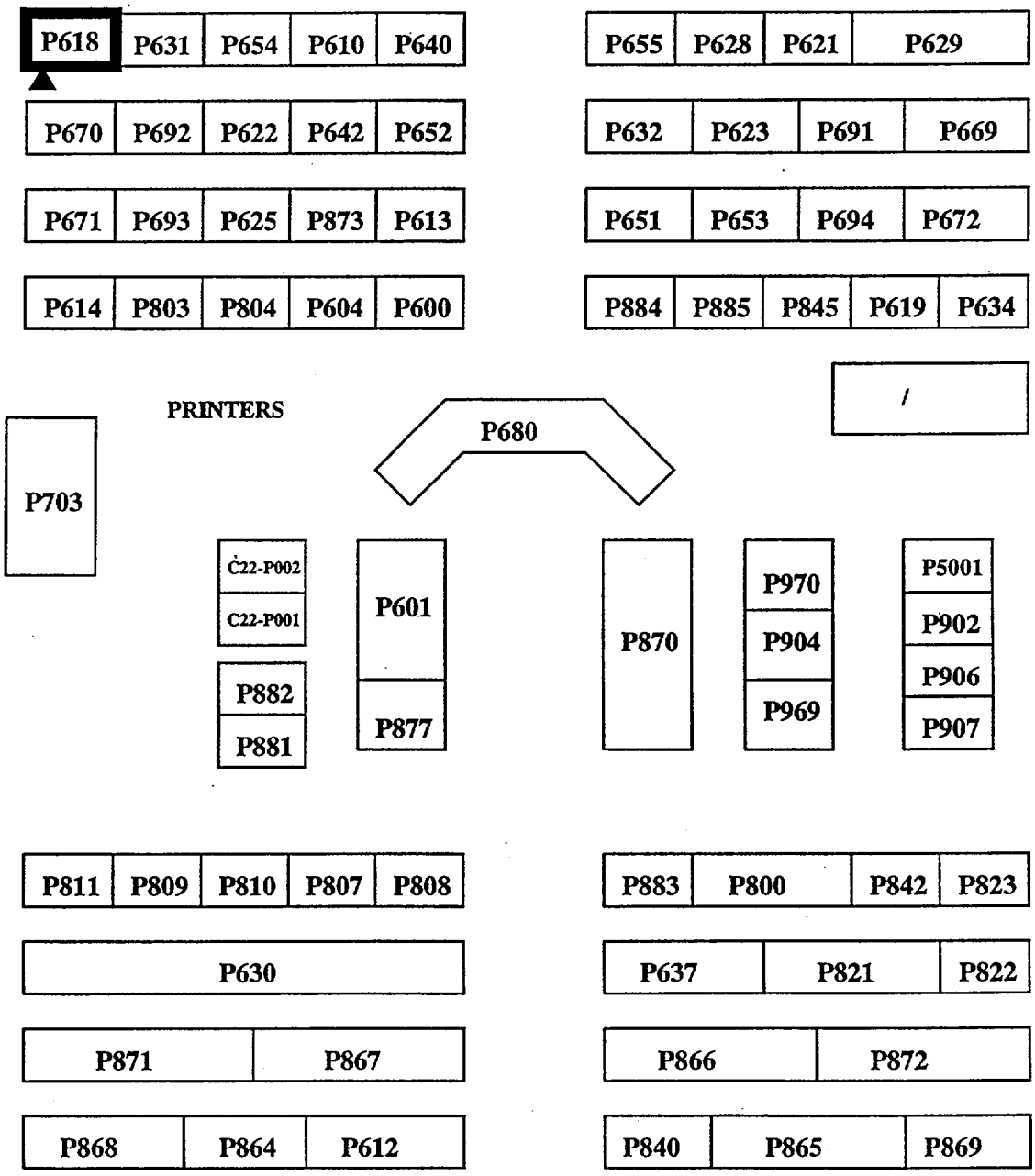
Standard: *Performer informs Control Room Step 1.2.7 is complete.*

1.2.7 CLOSE Compartment Y disconnect switch.

Instructor Cue: ***When performer informs Supervising Operator steps complete for LPCI C Injection Valve Seal in Logic are complete, the JPM is complete.***

PEI-SPI 6.5 RHR C Runout Injection (Continued)

Control Room Back Panel Locations



PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.b

Facility: PERRY Task No: 264-551-04-01

JPM No: B.2.b

Task Title: **Division 2 Diesel Restoration (ONI-R10)**

K/A Reference:

295003	EA1.02 (4.2/4.3)	
264000	A2.09 (3.7 / 4.1)	

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION

This JPM is a simulation. The student shall not physically manipulate plant equipment. If necessary, remind the student that this JPM is a simulation, not an actual performance.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

Task Standard:	**Division 2 Diesel Generator is aligned for a local startup attempt, including reset of the Engine Overspeed Trip Mechanism, per ONI-R10, Attachment 9, Division 2 Diesel Restoration.**
Required Materials:	ONI-R10, Attachment 9, Division 2 Diesel Restoration SOI-R43, Division 1 and 2 Diesel Generator System Pictures of local Division 2 Diesel components
General References:	ONI-R10, Attachment 9, Division 2 Diesel Restoration Revision 4, PIC 16 SOI-R43, Division 1 and 2 Diesel Generator System Revision 8, PIC 16
Initial Conditions:	**ONI-R10, Loss of AC Power, has been entered due to a Station Blackout. The Division 2 Diesel Generator started but tripped. Override of Division 2 Diesel Generator Non-LOCA Trips was <u>not</u> performed. Brkr EF1C07 was confirmed to be in the close position. The Diesel System Responsible System Engineer (RSE) has been directed to report to the Division 2 Diesel Generator Room as soon as possible to provide engineering support.**
Initiating Cue:	**The Unit Supervisor directs you, as an in-plant operator, to coordinate with the Control Room to restart Division 2 Diesel Generator in accordance with ONI-R10, Attachment 9, Division 2 Diesel Restoration. Steps 1 through 6 have been completed. You will be relieved as soon as a Non-Licensed Operator becomes available.**
Time Critical Task:	YES/NO X
Validation Time:	20 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD CAPITAL** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Obtains copy of ONI-R10, Attachment 9, Division 2 Diesel Restoration, to be used in the field during task performance.

STANDARD: Copy of ONI-R10, Attachment 9, Division 2 Diesel Restoration, obtained

COMMENTS:
1. Candidate would obtain copy of ONI-R10, Attachment 9, Division 2 Diesel Restoration from the Control Room before proceeding to the Division 2 Diesel Generator Room.

   Provide candidate with a copy of ONI-R10.

2. Candidate should not require a copy of SOI-R43 until Step 4 below when he confirms that the Engine Overspeed Trip Mechanism is tripped.

SAT / UNSAT START TIME: _____

_____ 2. Contact the Control Room.

STANDARD: Verifies the Control Room Operator is ready for the in-plant actions to be performed.

COMMENTS:
1. **As the Control Room Operator, inform the candidate that ONI-R10, Attachment 9, Steps 1, 2, 3, and 6 are completed. Steps 4 and 5 were not required to be performed.**

   This information was reported in the Initial Cue.

2. **An I&C Technician is not required for the in-plant steps.**

SAT / UNSAT

_____ 3. Align Division 2 Diesel Generator as follows:

a. At Brkr EH1201, DIESEL GEN BRKR, reset LOCKOUT RELAY 86G.
b. At Brkr EH1201, DIESEL GEN BRKR, reset LOCKOUT RELAY 86G1.

STANDARD:
a. LOCKOUT RELAY 86G is reset as indicated by black flag at Brkr EH1201, DIESEL GEN BRKR.
b. LOCKOUT RELAY 86G1 is reset as indicated by black flag at Brkr EH1201, DIESEL GEN BRKR.

COMMENTS:
1. **This ONI-R10 step will be divided into 3 JPM steps for examination purposes.**
2. LOCKOUT RELAYS 86G and 86G1 are normally in the RESET condition.
3. **If candidate asks about the status of LOCKOUT RELAYS 86G and 86G1, then cue the candidate that the relay flags indicate the RESET condition.**
4. LOCKOUT RELAYS 86G and 86G1 are located at Brkr EH1201 in the Division 2 Switchgear Room, Control Complex, 620'.

SAT / UNSAT

---

* 4. **Align Division 2 Diesel Generator as follows:**

c. On the engine, verify that the Engine Overspeed Trip Mechanism is reset.

STANDARD: Confirms that the Division 2 Diesel Generator trip is due to overspeed.

COMMENTS:

1. **Cue the candidate that the Engine Overspeed Trip Mechanism is tripped and alarm DIESEL GEN OVERSPEED / MAN EMERG TRIP (window F3) is locked in on Panel 1H51-P054B. This is the reason that the Division 2 Diesel Generator is tripped.**
2. **Provide candidate with a copy of ARI-H51-P054B (F3) if requested.**
3. **As the Control Room Operator, inform the candidate to reset the overspeed trip, if asked.**
4. Candidate proceeds to SOI-R43, Section 7.9, Overspeed Trip Reset.
5. **Provide candidate with a copy of SOI-R43.**
6. **Resetting the Overspeed Trip Mechanism would require the candidate to climb onto the diesel front standard. For safety reasons, inform the candidate to identify the general location of the components that he is required to operate during the reset of the Overspeed Trip Mechanism.**
7. **In the next step, use the attached pictures for the Overspeed Vent Valve Lever, 1R43-F506B, and Overspeed Reset Valve, 1R43-F552B.**
8. All task steps will be performed at Diesel Generator Building 620', Division 2 Diesel Generator Room.

SAT / UNSAT

* 5. **Reset the overspeed trip as follows:**

a. Reset the Overspeed Vent Valve Lever, 1R43-F506B.
b. Position the Overspeed Reset Valve, 1R43-F552B, to the "reset" position.
c. When air venting stops, position the Overspeed Reset Valve, 1R43-F552B, to the "normal" position.
d. Ensure the following valves have opened by observing the valve indicating mark on the valve stem:

1) Right Bank Air Butterfly Valve, 1R43-F524B.
2) Left Bank Air Butterfly Valve, 1R43-F525B.

STANDARD:

a. Identifies the general location of the Overspeed Vent Valve Lever, 1R43-F506B and, stating the desired final position of the Overspeed Vent Valve Lever (reset), positions it to the reset position.

b. Identifies the general location of the Overspeed Reset Valve, 1R43-F552B and, stating the desired position of the Overspeed Reset Valve (reset) positions it to the reset position.

c. When air venting stops, states the desired final position of the Overspeed Reset Valve (normal), and positions it to the normal position.

d. Identifies the location of Right Bank Air Butterfly Valve, 1R43-F524B, and confirms that the valve has re-opened by observing the valve indicating mark on the valve stem.

e. Identifies the location of Left Bank Air Butterfly Valve, 1R43-F525B, and confirms that the valve has re-opened by observing the valve indicating mark on the valve stem.

COMMENTS:

1. Candidate references SOI-R43, Section 7.9.
2. **Cue the candidate that Overspeed Vent Valve Lever, 1R43-F506B is in the RESET position.**
3. **Cue the candidate that Overspeed Reset Valve, 1R43-F552B is in the RESET position.**
4. **Cue the candidate that air venting has stopped.**
5. **Cue the candidate that Overspeed Reset Valve, 1R43-F552B is in the NORMAL position.**
6. There are new valve tags on 1R43-F524B and 1R43-F525B. They are identified as 'Combustion Air Strangulation Valve'; however, the steps in SOI-R43, Section 7.9 still contain the old valve names.
7. **Cue the candidate that Right Bank Air Butterfly Valve, 1R43-F524B, has re-opened.**
8. **Cue the candidate that Left Bank Air Butterfly Valve, 1R43-F525B, has re-opened.**

SAT / UNSAT

_____ 6. Perform independent verification of the required components.

STANDARD: Independent verification of the required component is performed.

COMMENTS:

1. **As the Unit Supervisor, when the candidate has completed the first verification, then inform him that you will assign another operator to complete the second verification and that he should continue with the task.**
2. **If candidate asks, then inform him that DIESEL GEN OVERSPEED / MAN EMERG TRIP (window F3) alarm has cleared.**
3. Candidate exits SOI-R43, Section 7.9, and returns to ONI-R10, Attachment 9.

SAT / UNSAT

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

* 7. **Align Division 2 Diesel Generator as follows:**

d. At Generator Control Panel, 1H51-P055B, place DIESEL GENERATOR CONTROL TRANSFER in LOCAL.
e. At Generator Control Panel, 1H51-P055B, verify DIESEL GENERATOR VOLTAGE REGULATOR MODE SELECTOR in AUTO.
f. Place the DIESEL GENERATOR switch handle at 1H13-P877 in AUTO

STANDARD:
d. DIESEL GENERATOR CONTROL TRANSFER switch is placed in the LOCAL position.

e. DIESEL GENERATOR VOLTAGE REGULATOR MODE SELECTOR switch is in AUTO.

f. Contacts the Control Room Operator to place the DIESEL GENERATOR switch handle at 1H13-P877 in AUTO.

COMMENTS:
1. Candidate references ONI-R10, Attachment 9.

2. Cue the candidate that the DIESEL GENERATOR CONTROL TRANSFER switch is in the LOCAL position.

3. The DIESEL GENERATOR CONTROL TRANSFER switch is normally in the REMOTE position.

4. Cue the candidate that the DIESEL GENERATOR VOLTAGE REGULATOR MODE SELECTOR switch is in AUTO.

5. The DIESEL GENERATOR VOLTAGE REGULATOR MODE SELECTOR switch is normally in the AUTO position.

6. As the Control Room Operator, cue the candidate that the DIESEL GENERATOR switch handle at 1H13-P877 is in the AUTO position.

7. Inform candidate that a Non-Licensed Operator has arrived and that he will complete the remainder of Attachment 9.

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: Division 2 Diesel Generator is aligned for a local startup attempt, including reset of the Engine Overspeed Trip Mechanism.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALTHROUGH
JOB PERFORMANCE MEASURE

VERIFICATION OF COMPLETION

Job Performance Measure No. B.2.b

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

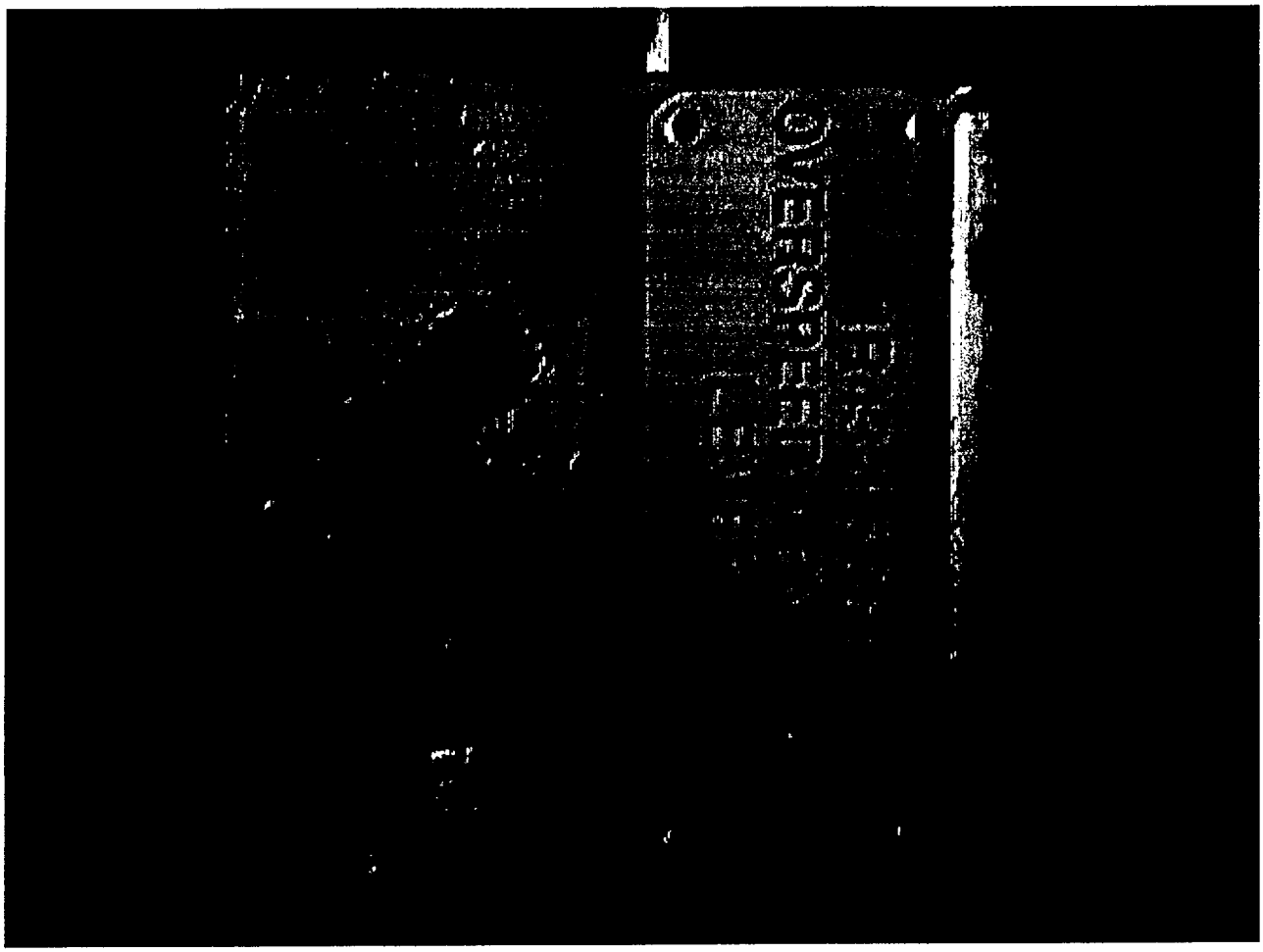
Results: Circle One SAT UNSAT

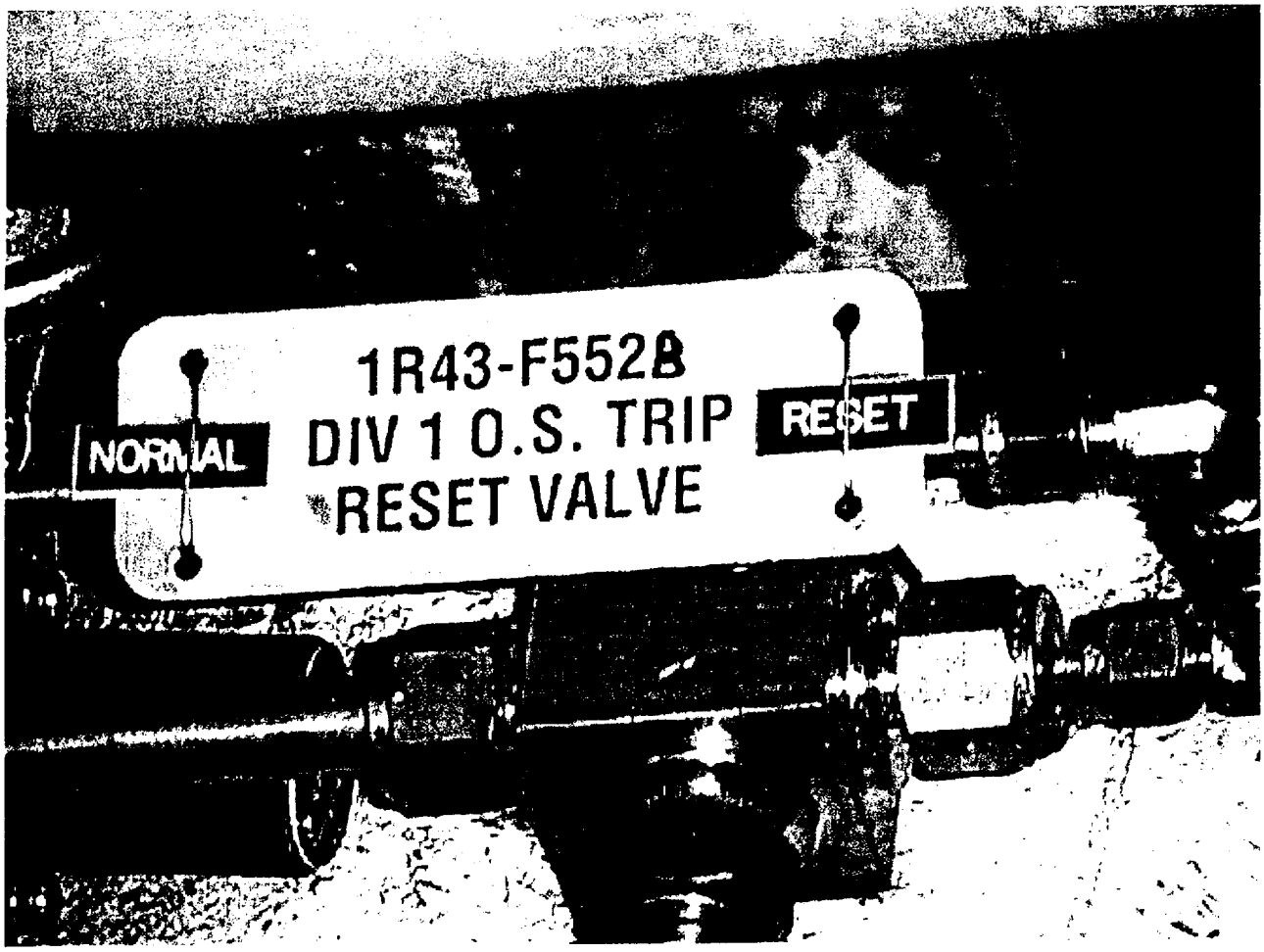
Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE WORKSHEET
Attachment #1

Initial Conditions:	ONI-R10, Loss of AC Power, has been entered due to a Station Blackout. The Division 2 Diesel Generator started but tripped. Override of Division 2 Diesel Generator Non-LOCA Trips was not performed. Brkr EF1C07 was confirmed to be in the close position. The Diesel System Responsible System Engineer (RSE) has been directed to report to the Division 2 Diesel Generator Room as soon as possible to provide engineering support.
Initiating Cue:	The Unit Supervisor directs you, as an in-plant operator, to coordinate with the Control Room to restart Division 2 Diesel Generator in accordance with ONI-R10, Attachment 9, Division 2 Diesel Restoration. Steps 1 through 6 have been completed. You will be relieved as soon as a Non-Licensed Operator becomes available.




1R43-F552B
DIV 1 O.S. TRIP
RESET VALVE
NORMAL
RESET

Perry JPM B.2.b

Division 2 DG Restoration (Faulted)

Reference Materials

Division 2 Diesel Restoration <B00756>

NOTE: One non-licensed operator and one I&C Technician should be assigned to perform the following actions; this attachment should accompany the non-licensed operator. Some Control Room actions are required.

****

CAUTION

Restoration of power to EH12 without preventing RHR B and C pumps from starting before performing a system fill and vent on the effected systems may result in severe water hammer damage to the Emergency Core Cooling Systems.

****

1. Prior to restoring power to EH12, open and rack out the following breakers:

   a. Brkr EH1210; RHR PUMP C, 1E12-C002C
   b. Brkr EH1208; RHR PUMP B, 1E12-C002B

2. Place the DIESEL GENERATOR switch handle at 1H13-P877 to PULL TO LOCK.

3. Verify that the following Breakers are open:

   a. PREFERRED SOURCE BRKR, EH1212
   b. ALT PREFERRED SOURCE BRKR, EH1213
   c. ISOLATING BRKR, EH1214
   d. DIESEL GEN BRKR, EH1201

4. Perform Override of Division 1(2) Diesel Generator non-LOCA Trips per SOI-R43 Section 7.5., if the following conditions are met:

   Conditions
   - Operation of the Division 2 Diesel Generator is required to achieve or maintain safe shutdown;
   and
   - A Division 2 Diesel Generator trip or failure to start has occurred due to a trip that can be overridden;
   and
   - Shift Supervisor permission has been obtained to override Division 2 Diesel Generator non-LOCA trips.

5. If MCC EF1C07, 1R24-S023; Brkr EF1C07, is open, perform the following:

   a. Verify MCC EF1C07 disconnect switches aligned per ELI-R24.
   b. At EF-1-C, close MCC EF1C07, 1R24-S023; Brkr EF1C07.

Division 2 Diesel Restoration (Cont.)

6. Dispatch appropriate personnel to monitor the attempted diesel start in order to expedite diesel emergency repairs, if required.

NOTE: When a Diesel Generator is restored, the following systems will start/reposition for a Loss of Offsite Power:

- MCC, SWGR, and Misc. Elect Equip Area HVAC System, M23/M24
- Control Room HVAC and Emergency Recirculation System, M25/M26
- Emergency Closed Cooling System, P42
- Emergency Service Water System, P45
- Control Complex Chilled Water System, P47

7. Align Division 2 Diesel Generator as follows:

   a. At Brkr EH1201; DIESEL GEN BRKR, reset LOCK-OUT RELAY 86G.
   b. At Brkr EH1201; DIESEL GEN BRKR, reset LOCK-OUT RELAY 86G1.
   c. On the engine, verify that the Engine Overspeed Trip Mechanism is reset.
   d. At Generator Control Panel, 1H51-P055B, place DIESEL GENERATOR CONTROL TRANSFER in LOCAL.
   e. At Generator Control Panel, 1H51-P055B, verify DIESEL GENERATOR VOLTAGE REGULATOR MODE SELECTOR in AUTO.
   f. Place the DIESEL GENERATOR switch handle at 1H13-P877 in AUTO.

8. If NON-LOCA trips have not been overridden, wait 2 minutes for the shutdown signal to reset.

9. Start the engine by taking the INOP/NORMAL/START keylock to START at Engine Control Panel, 1H51-P054B.

10. When the Diesel starts, verify the following at 1H51-P055B:

    a. Brkr EH1201; DIESEL GENERATOR BRKR, automatically closes to energize Bus EH12.
    b. DIESEL GENERATOR AUTOMATIC VOLTAGE REGULATOR CONTROL is adjusted to obtain 4100 to 4300 volts.
    c. GOVERNOR CONTROL is adjusted to obtain 450 RPM/60 Hz.

11. On 1H13-P601, verify ESW Pump B, 1P45-C001B, automatically starts.

12. Operate Division 2 Diesel Generator per SOI-R43.

14. If desired to return the DG to service, perform the following;

    a. Place INOP/NORMAL/START keylock in NORMAL at 1H51-P054A(B).
    b. Place DIESEL GENERATOR in AUTO at 1H13-P877, Division 1(2) Power section.
    c. Place DIESEL GEN OUT OF SERVICE in NORM at 1H13-P877, Division 1(2) Power section.

    NOTE: There is a two minute time delay before the Diesel will be in Standby and alarms/inop indication will clear.

    d. Verify proper operation of the Shutdown Cylinder by observing retraction of the cylinder plunger.
    e. If the Diesel is not to be started at this time, place the HORN switch in DE ACT at 1H51-P054A(B).

15. If desired, obtain a lube oil sample as follows;

    a. Open the DIV 1(2) DG Lube Oil Sump Drain, 1R47-F501A(B).
    b. Place a sample in a suitable container.
    c. Close the DIV 1(2) DG Lube Oil Sump Drain, 1R47-F501A(B).
    d. The sample should be tracked using the appropriate Chemistry Sample Tracking System.

16. Perform independent verification of required components.

7.9 Overspeed Trip Reset

NOTE: Performance of this section requires the completion of a verification checklist.

1. Reset the overspeed trip as follows:

    a. Reset the Overspeed Vent Valve Lever, 1R43-F506A(B).
    b. Position the overspeed Reset Valve, 1R43-F552A(B), to the "reset" position.
    c. When air venting stops, position the Overspeed Reset Valve, 1R43-F552A(B), to the "normal" position.
    d. Ensure the following valves have opened by observing the valve indicating mark on the valve stem:

        1) Right Bank Air Butterfly Valve, 1R43-F524A(B).

        2) Left Bank Air Butterfly Valve, 1R43-F525A(B).

2. Perform independent verification of the required components.

Verification Checklist Section 7.9

Date Completed:

Reason for Verification: Division 2 Overspeed Trip Reset

LOC	DEVICE NAME/COMPONENT MPL	POS	INIT	VERIF INIT	REMARKS
Standby Diesel Engine, 1R43-C001B, DG Bldg, Elev 620' B/01					
	OVERSPEED VENT VALVE LEVER, 1R43-F506B	*	____	____	RESET
	RIGHT BANK AIR BUTTERFLY VALVE, 1R43-F524B	O	____	____	____
	LEFT BANK AIR BUTTERFLY VALVE, 1R43-F525B	O	____	____	____
	OVERSPEED RESET VALVE, 1R43-F552B	*	____	____	NORMAL

The Unit Supervisor may authorize deviations per PAP-0205, Operability of Plant Systems.

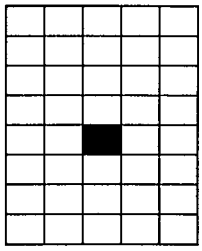
	PRINT NAME	SIGNATURE	INITIALS	DATE
1.	____	____	____	____
2.	____	____	____	____
3.	____	____	____	____
4.	____	____	____	____
	Unit Supervisor review for completeness:	____	____	____

Computer Point ID
None

SER Address
239

DG TRIP
OVERSPEED

E3



1.0 CAUSE OF ALARM

1. DIESEL GENERATOR, 1R43-C001B, speed >517.5 RPM as sensed by 1R43-N707B.

2. Diesel overspeed could be caused by a malfunction of the governor control system.

2.0 AUTOMATIC ACTION

1. DIESEL GENERATOR, 1R43-C001B, trips.

3.0 IMMEDIATE OPERATOR ACTION

None

4.0 SUBSEQUENT OPERATOR ACTION

1. Enter ONI-R22-1, Loss of an Essential and/or a Stub 4.16KV Bus.

2. If DG if required during a LOCA and improper governor control system operation is suspected, consideration should be given to resetting the DG overspeed trip and operating the DG with Mechanical Governor Control per SOI-R43.

3. Contact maintenance to initiate corrective action.

4.1 Technical Specifications

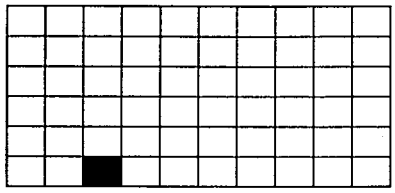
1. 3.8.1, AC Sources - Operating
   3.8.2, AC Sources - Shutdown

Computer Point ID
None

SER Address
None

DIESEL GEN
OVERSPEED/MAN
EMERG TRIP

F3



1.0 CAUSE OF ALARM

1. Either of the following:

   a. Diesel speed >517.5 RPM as sensed by 1R43-N008B.
   b. The Manual Emergency Trip Valve, 1R43-N708B, has been operated as sensed by 1R43-N008B.

2. Overspeed could be caused by failure of governor control system.

2.0 AUTOMATIC ACTION

1. Diesel Generator, 1R43-C001B, trips.

2. DG TRIP OVERSPEED is received at Diesel Generator Benchboard, 1H13-P877.

3.0 IMMEDIATE OPERATOR ACTION

None

4.0 SUBSEQUENT OPERATOR ACTION

1. If DG is required during a LOCA and improper governor control system operation is suspected, consideration should be given to resetting the DG overspeed trip and operating the DG with Mechanical Governor Control per SOI-R43.

2. Contact maintenance to initiate corrective action.

4.1 Technical Specifications

1. 3.8.1, AC Sources
   {3.8.1, AC Sources - Operating}
   {3.8.2, AC Sources - Shutdown}

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.c

Facility: PERRY Task No: 201-565-05-01

JPM No: B.2.c

Task Title: **CRD Alternate Injection – (Start Second CRD Pump)**

K/A Reference: 295031 EA1.10 (3.6/3.7)
201001 A2.08 (2.8 / 2.8)

Examinee: _____ Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

CAUTION

This JPM is a simulation. The student shall not physically manipulate plant equipment. If necessary, remind the student that this JPM is a simulation, not an actual performance.

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.c

Task Standard:	**CRD Pump B Minimum Flow Isolation Valve is closed, the CRD Pump Suction Filter is bypassed, and both Drive Water Filters are in service, in preparation for startup of the second CRD Pump in accordance with PEI-SPI 4.1.**
Required Materials:	Working copy of PEI-SPI 4.1, CRD Alternate Injection
General References:	PEI-SPI 4.1, CRD Alternate Injection Revision 0
Initial Conditions:	**The plant is being operated in accordance with PEI-B13, RPV Control (Non-ATWS). CRD Alternate Injection using a single CRD Pump has been performed. CRD Pump A is currently operating. A scram signal is present. The CRD HYDRAULICS FLOW CONTROL, 1C11-R600, is in MANUAL with its output set to 100%. The CRD DRIVE PRESS CONTROL VALVE, C11-F003, is full open. CRD Pump A Minimum Flow Isolation Valve, 1C11-F015A, has been unlocked and closed.**
Initiating Cue:	**The Unit Supervisor directs you, as an in-plant operator, to coordinate with the Control Room to raise CRD injection flow by starting the second CRD Pump in accordance with PEI-SPI 4.1, CRD Alternate Injection.**
Time Critical Task:	YES/NO X
Validation Time:	15 minutes

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.c

PERFORMANCE INFORMATION

Critical steps are denoted with an asterisk (*) to the left of the step number and appear in **BOLD** letters. Failure to meet the standards for a critical step constitutes failure of the Job Performance Measure. The sequence of steps is assumed unless denoted in the Comments section of this JPM.

Step#

_____ 1. Obtains copy of PEI-SPI 4.1, CRD Alternate Injection, to be used in the field during task performance.

STANDARD: PEI-SPI 4.1 obtained from OSC PEI File Cabinet located outside of the OSC at Control Complex 599'.

COMMENTS:

1. When candidate has located the OSC PEI File Cabinet, inform the candidate that he is not to break the locking tab on the PEI-SPI file cabinet.

   Provide candidate with a copy of PEI-SPI 4.1.

2. If the OSC PEI File Cabinet locking tab is broken, inform the Perry examination representative so that a new locking tab can be installed.

3. Candidate should verbalize the tools that are required in the field to perform this task as listed in PEI-SPI 4.1 (one medium valve hook, one wirecutter, and two red valve locking tabs.

SAT / UNSAT START TIME: _____

_____ 2. Contact the Control Room.

STANDARD: Verifies the Control Room Operator is ready for the in-plant actions to be performed.

COMMENTS:

1. **As the Control Room Operator, cue the candidate that Steps 1.0 through 8.5 are completed.**
2. The completion of Steps 1.0 through 8.5 was indirectly reported as completed in the Initial Condition summary.
3. All task steps will be performed at Intermediate Building 574', CRD Pump Room.

SAT / UNSAT

---

* _____ 3. **UNLOCK and CLOSE Pump B Minimum Flow Isolation 1C11-F015B.**

STANDARD: Locates the correct valve; describes action to cut the locking tab; and, stating the desired final position of the valve (closed), operates the valve in the clockwise direction.

COMMENTS:

1. All PEI valves in the field are identified with a metal valve tag consisting of a gold background with black lettering.
2. **Cue the candidate that Pump B Minimum Flow Isolation Valve, 1C11-F015B, is unlocked and closed.**

SAT / UNSAT

---

* 4. **Verify the following valves are open:**

- **Pump Suction Filter Bypass 1C11-F116**
- **Pump Suction Filter Bypass 1C11-F117**

STANDARD: Locates the correct valves and, stating the desired final position of the valves (open), operates the valves in the counter clockwise direction.

COMMENTS:

1. Candidate may address the use of the valve hook in order to operate these valves.
2. **Cue the candidate that Pump Suction Filter Bypass Valves, 1C11-F116 and 1C11-F117, are open.**
3. Pump Suction Filter Bypass Valves, 1C11-F116 and 1C11-F117, are normally closed.

SAT / UNSAT

---

* 5. **Verify the following valves are open:**

- **Drive Water Fltr A Inlet Isolation 1C11-F020A**
- **Drive Water Fltr A Outlet Isolation 1C11-F021A**
- **Drive Water Fltr B Inlet Isolation 1C11-F020B**
- **Drive Water Fltr B Outlet Isolation 1C11-F021B**

STANDARD: Locates the correct valves and, stating the desired final position of the valves (open), operates the valves in the counter clockwise direction.

COMMENTS:

1. Candidate may address the use of the valve hook in order to operate these valves.
2. **Cue the candidate that:**

   Drive Water Fltr A Inlet Isolation, 1C11-F020A, is open
   Drive Water Fltr A Outlet Isolation, 1C11-F021A, is open
   Drive Water Fltr B Inlet Isolation, 1C11-F020B, is open
   Drive Water Fltr B Outlet Isolation, 1C11-F021B, is open

3. During normal operation, either Drive Water Filter A or B is in operation with the other Drive Water Filter (B or A) isolated.

SAT / UNSAT

_____ 6. Contact the Control Room.

STANDARD: Notifies the Control Room Operator that Steps 8.6.1 and 8.6.2 for PEI-SPI 4.1 have been completed.

COMMENTS: **As the Control Room Operator, inform the candidate to return to the Control Room.**

SAT / UNSAT STOP TIME: _____

TERMINATING CUES: **CRD Pump B Minimum Flow Isolation Valve is closed, the CRD Pump Suction Filter is bypassed, and both Drive Water Filters are in service, in preparation for startup of the second CRD Pump in accordance with PEI-SPI 4.1.**

PERRY NRC INITIAL LICENSE 2000-01 EXAM
CONTROL ROOM SYSTEMS AND FACILITY WALKTHROUGH
JOB PERFORMANCE MEASURE B.2.c

VERIFICATION OF COMPLETION

Job Performance Measure No. B.2.c

Examinee's Name: _____

Examiner's Name: _____

Date performed: _____

Results: Circle One SAT UNSAT

Time to complete: _____

Examiner's signature and date: _____ / _____

PERRY NRC INITIAL LICENSE 2000-01 EXAM
JOB PERFORMANCE MEASURE B.2.c
Attachment #1

Initial Conditions:	**The plant is being operated in accordance with PEI-B13, RPV Control (Non-ATWS). CRD Alternate Injection using a single CRD Pump has been performed. CRD Pump A is currently operating. A scram signal is present. The CRD HYDRAULICS FLOW CONTROL, 1C11-R600, is in MANUAL with its output set to 100%. The CRD DRIVE PRESS CONTROL VALVE, C11-F003, is full open. CRD Pump A Minimum Flow Isolation Valve, 1C11-F015A, has been unlocked and closed.**
Initiating Cue:	**The Unit Supervisor directs you, as an in-plant operator, to coordinate with the Control Room to raise CRD injection flow by starting the second CRD Pump in accordance with PEI-SPI 4.1, CRD Alternate Injection.**

Perry JPM B.2.c

CRD Alternate Injection
(Start Second CRD Pump)

Reference Materials

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Plant Emergency Instruction

TITLE: SPECIAL PLANT INSTRUCTION 4.1

CRD ALTERNATE INJECTION

REVISION: 0 EFFECTIVE DATE: 8-19-94

PREPARED: PEI Improvement Team Judith A. Cusick 8/16/94
Date

REVIEWED: Victor C. Colarusso 8-16-94
Date

PORC REVIEW AND RECOMMENDATION FOR APPROVAL MEETING NUMBER: 94-0142

DATE: 8/16/94

APPROVED: David P. Boyd 8/16/94
Date

PEI-SPI 4.1 CRD Alternate Injection

ENTRY CONDITIONS

This instruction is entered when condensate and feedwater, ECCS, and RCIC do not provide enough injection into the RPV.

SCOPE

This alignment provides alternate injection into the RPV with the Control Rod Drive system using either single pump injection, 182 gpm at 1033 psig, or two pump injection, 216 gpm at 1033 psig.

NECESSARY EQUIPMENT

Control Room PEI-SPI File Cabinet:
- two PEI-SPI keys
- four INST VOL BYPASS keys

CC 599' D/01, OSC PEI File Cabinet:
- one medium valve hook
- one wirecutter
- two red valve locking tabs

LOCATION OF REQUIRED LOCAL ACTIONS

IB 574', CRD Pump Room:
- C/08, Pump A(B) Minimum Flow Isolation 1C11-F015A(B)

The following are operated when a second CRD Pump is to be started:

IB 574', CRD Pump Room:
- C/08, Pump Suction Filter Bypass 1C11-F116
- C/08, Pump Suction Filter Bypass 1C11-F117
- E/08, Drive Water Fltr A(B) Inlet Isolation 1C11-F020A(B)
- E/08, Drive Water Fltr A(B) Outlet Isolation 1C11-F021A(B)

(CONTINUED ON NEXT PAGE)

PEI-SPI 4.1 CRD Alternate Injection (Continued)

ACTIONS

NOTE

This alignment may affect insertion of control rods by scram or ARI.

1.0 **IF** any CRD Pump is running
AND any Service Air Compressor or Instrument Air Compressor is running,
THEN PROCEED TO Step 7.0 of this instruction.

****
*
* CAUTION
*
* Exceeding 7000 kW for Division 1 or Division 2 Diesel Generator
* will result in overloading the diesel generator.
*
****

2.0 **IF** Bus XH11 is de-energized,
THEN RESTORE Bus XH11 as follows:

2.1 **PLACE** BUS XH11 LOCA BYPASS keylock switch in BYPASS.

2.2 **CLOSE** ISOLATING BRKR EH1116.

3.0 **IF** Bus XH12 is de-energized,
THEN RESTORE Bus XH12 as follows:

3.1 **PLACE** BUS XH12 LOCA BYPASS keylock switch in BYPASS.

3.2 **CLOSE** ISOLATING BRKR EH1214.

4.0 **AT** H13-P970,
VERIFY two NCC Pumps are running.

(CONTINUED ON NEXT PAGE)

PEI-SPI 4.1 CRD Alternate Injection (Continued)

5.0 IF NO Service Air Compressor is running
AND NO Instrument Air Compressor is running,
THEN REFER TO SOI-P51/52, Service and Instrument Air System, Section 4.3, Serv (Inst) Air Compressor Manual Startup from Standby Readiness.

6.0 IF NO CRD Pump is running,
THEN START CRD PUMP A(B) as follows:

6.1 START CRD AUX OIL PUMP A(B) C11-C002A(B).

6.2 VERIFY blue PERM light is energized.

6.3 PLACE CRD HYDRAULICS FLOW CONTROL C11-R600 in MANUAL and ADJUST output to 0.

6.4 START CRD PUMP A(B) C11-C001A(B).

7.0 IF Instrument Air is isolated to Containment
AND NO known air leak is present in Containment,
THEN OPEN INST AIR CNTMT ISOL P52-F200.

8.0 COMMENCE injection as follows:

8.1 VERIFY the following pushbuttons are armed and depressed:

- RPS MANUAL SCRAM CH A C71A-S3A
- RPS MANUAL SCRAM CH C C71A-S3C
- RPS MANUAL SCRAM CH B C71A-S3B
- RPS MANUAL SCRAM CH D C71A-S3D

8.2 VERIFY CRD HYDRAULICS FLOW CONTROL C11-R600 is in MANUAL.

8.3 ADJUST CRD HYDRAULICS FLOW CONTROL C11-R600 output slowly to 100 to maximize flow.

8.4 OPEN CRD DRIVE PRESS CONTROL VALVE C11-F003.

8.5 AT IB 574' C/08, CRD Pump Room,
UNLOCK and CLOSE Pump A(B) Minimum Flow Isolation 1C11-F015A(B).

(CONTINUED ON NEXT PAGE)

PEI-SPI 4.1 CRD Alternate Injection (Continued)

8.6 **IF** directed to raise CRD injection flow **AND** the second CRD Pump is available, **THEN START** the second CRD Pump as follows:

NOTE

Two pump operation may result in accelerated CRD Pump filter clogging.

8.6.1 **AT** IB 574' C/08, CRD Pump Room, **PERFORM** the following:

8.6.1.1 **UNLOCK** and **CLOSE** Pump B(A) Minimum Flow Isolation 1C11-F015B(A).

8.6.1.2 **VERIFY** the following valves are open:

- Pump Suction Filter Bypass 1C11-F116
- Pump Suction Filter Bypass 1C11-F117

8.6.2 **AT** IB 574' E/08, CRD Pump Room, **VERIFY** the following valves are open:

- Drive Water Fltr A Inlet Isolation 1C11-F020A
- Drive Water Fltr A Outlet Isolation 1C11-F021A
- Drive Water Fltr B Inlet Isolation 1C11-F020B
- Drive Water Fltr B Outlet Isolation 1C11-F021B

(CONTINUED ON NEXT PAGE)

PEI-SPI 4.1 CRD Alternate Injection (Continued)

****

CAUTION

Exceeding 7000 kW for Division 1 or Division 2 Diesel Generator will result in overloading the diesel generator.

****

8.6.3 **IF** Bus XH12(11) is de-energized,
THEN RESTORE Bus XH12(11) as follows:

8.6.3.1 **PLACE** BUS XH12(11) LOCA BYPASS keylock switch in BYPASS.

8.6.3.2 **CLOSE** ISOLATING BRKR EH1214(1116).

8.6.4 **START** CRD AUX OIL PUMP B(A) C11-C002B(A).

8.6.5 **VERIFY** blue PERM light is energized.

8.6.6 **START** CRD PUMP B(A) C11-C001B(A).

(CONTINUED ON NEXT PAGE)

PEI-SPI 4.1 CRD Alternate Injection (Continued)

9.0 **SECURE** alternate injection as follows:

9.1 **IF** an Instrument Volume Level High scram signal is present, **THEN RESET** the scram as follows:

9.1.1 **PLACE** the following keylock switches in BYPASS:

- INST VOL LEVEL HI SCRAM BYPASS CH A C71-S4A
- INST VOL LEVEL HI SCRAM BYPASS CH C C71-S4C
- INST VOL LEVEL HI SCRAM BYPASS CH B C71-S4B
- INST VOL LEVEL HI SCRAM BYPASS CH D C71-S4D

9.1.2 **DEPRESS** the following pushbuttons:

- SCRAM RESET CH A C71A-S5A
- SCRAM RESET CH C C71A-S5C
- SCRAM RESET CH B C71A-S5B
- SCRAM RESET CH D C71A-S5D

9.2 **AT** IB 574' C/08, CRD Pump Room,
OPEN and **LOCK** Pump A(B) Minimum Flow Isolation 1C11-F015A(B).

9.3 **IF** two CRD Pumps are running,
THEN SECURE one CRD Pump as follows:

9.3.1 **STOP** CRD PUMP B(A) C11-C001B(A).

(CONTINUED ON NEXT PAGE).

PEI-SPI 4.1 CRD Alternate Injection (Continued)

9.3.2 **AT** IB 574' C/08, CRD Pump Room, **PERFORM** the following:

9.3.2.1 **OPEN** and **LOCK** Pump B(A) Minimum Flow Isolation 1C11-F015B(A).

9.3.2.2 **CLOSE** the following valves:

- Pump Suction Filter Bypass 1C11-F116
- Pump Suction Filter Bypass 1C11-F117

9.3.3 **AT** IB 574' E/08, CRD Pump Room, **CLOSE** the following valves for the second CRD drive water filter:

- Drive Water Fltr B(A) Inlet Isolation 1C11-F020B(A)
- Drive Water Fltr B(A) Outlet Isolation 1C11-F021B(A)

9.4 **ADJUST** the following to obtain 250-275 psid CRD drive water differential pressure and 15-20 psid CRD cooling water differential pressure:

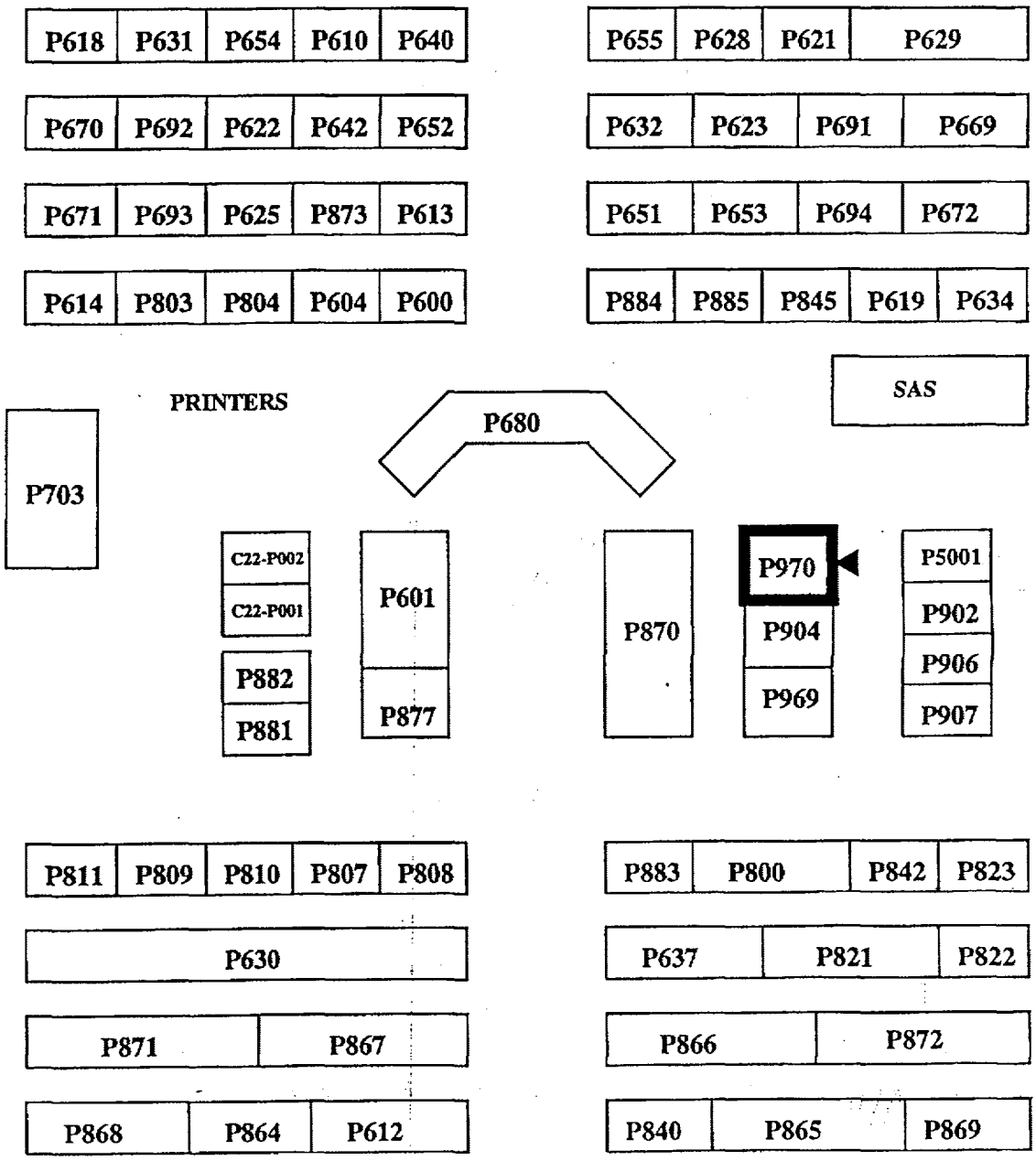
- CRD DRIVE PRESS CONTROL VALVE C11-F003
- CRD HYDRAULICS FLOW CONTROL C11-R600

9.5 **PLACE** CRD HYDRAULICS FLOW CONTROL C11-R600 in AUTOMATIC.

==========END OF INSTRUCTION STEPS==========

PEI-SPI 4.1 CRD Alternate Injection (Continued)

Control Room Back Panel Locations



JOB PERFORMANCE MEASURE COVER SHEET SPI-16

NUMBER:	JPMP-4201-005-PEI-SPI[8]			PAGE:	1
TITLE:	CRD Alternate Injection				SPI-16
TIME REQ'D:	30 MIN			TIME CRITICAL?	NO
TASK NO(S):	201-565-05-01 201-531-05-04				
K/A DATA:	201000	A2.02	3.2/3.3	295031	EA1.10	3.6/3.7
	201003	GEN 7	3.6/3.6	294001	A1.02	4.2/4.2
	295006	GEN 7	3.7/4.0	294001	A1.12	3.5/4.2
	295031	GEN 7	3.8/4.4	294001	A1.13	4.5/4.3
REFERENCES:	PEI-SPI 4.1, Rev. 0					
TOOLS & EQUIPMENT:	Medium Valve Hook Wirecutter					

PREPARED BY:	Paul K. Hetrick		PKH
	Print Name		Initial
TECHNICAL REVIEW:	N/A		
	Job Title	Section	Unit
	Signature		Date
INSTRUCTIONAL REVIEW:	LTI	PTS	OTU
	Job Title	Section	Unit
	NH Johnson		9/13/94
	Signature		Date
VALIDATED:	N/A		
	Job Title	Section	Unit
	N/A		
	Signature		Date
APPROVED:	Christopher Casson		9-13-94
	Signature		Date

JPM CUE SHEET

JPM No.JPMP-4201-005-PEI-SPI[8]	
INITIAL CONDITIONS:	Operating IAW PEI-B13, CRD Alternate Injection is required. CRDH Pump A is operating, a scram signal is present, C11 pressure control valve is full open, and the C11 flow controller has been adjusted by the SO to give the required flow. The A CRD suction and the A CRD drive water filters are in service.
INITIATING CUE:	The US directs you as an in- plant operator to coordinate with the Control Room SO to perform PEI-SPI 4.1.

JOB PERFORMANCE MESURE SETUP SHEET

1. Simulator Setup Instructions.
   - N/A

2. Location/Method
   -Plant/Simulate

3. Initial Conditions.
   Operating IAW PEI-B13, CRD Alternate Injection is required. CRDH Pump A is operating, a scram signal is present, C11 pressure control valve is full open, and the C11 flow controller has been adjusted by the SO to give the required flow. The A CRD suction and the A CRD drive water filters are in service.

4. Initiating Cue.
   The US directs you as an in- plant operator to coordinate with the Control Room SO to perform PEI-SPI 4.1.

	Performance Checklist		Standard
1.	Contacts the Control Room.	1.	Verifies the Supervising Operator is ready for the in-plant actions to be started.
Cue:	As the Supervising Operator inform the candidate that steps 1.0 through 8.3 are complete.		
*2.	Unlocks and closes Pump A Minimum Flow Isolation 1C11-F015A, IB574' C/08.	2.	Locates correct valve, describes action, and states the required position.
Cue:	As the Supervising Operator inform the candidate that CRD B Pump will be started.		
*3.	Unlocks and closes Pump B Minimum Flow Isolation 1C11-F015B, IB 574' C/08.	3.	Locates correct valve, describes action, and states the required position.
*4.	Verifies the following valves are open, IB 574' C/08: a. Pump Suction Filter Bypass 1C11-F116. b. Pump Sucton Filter Bypass1C11-F117.	4.	Locates correct valves, describes action, and states the required position. (May address the use of the valve hook.)
*5.	Verifies the following valves are open, IB 574' E/08: a. Drive Water Fltr A Inlet Isolation 1C11-F020A. b. Drive Water Fltr A Outlet Isolation 1C11-F021A. c. Drive Water Fltr B Inlet Isolation 1C11-F020B. d. Drive Water Fltr B Outlet Isolation 1C11-F021B.	5	Locates correct valves, describes actions, and states the required position. (May address the use of the valve hook.)

Standard (Terminating Cue):

CRD Suction Filter bypassed, both Drive Water Filters in service, and both pump minimum flow valves closed. (Both CRD Pumps operating in the injection mode.)